

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

GLEANINGS IN BEE CULTURE

VOL. XXXVIII.

FEBRUARY 15, 1910

No. 4



ONE OF THE FIRST KEEPERS OF ITALIAN BEES. 300 B.C.

BY C. O. FLUMARTY

PUBLISHED BY

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

How to Reach the CENTURY MARK

T. B. Terry's New Health Book

"HOW TO KEEP WELL AND LIVE LONG"

Author's Introductory

What I Know About the Matter

MY mother had eleven children. Only three lived to mature age. Of course I am one of them. But you can see my start in life was not a strong one. I was a sickly child like the rest. In college I broke down from too much confinement and study, stayed out a year, tried it again, but had to give up. Doctor told me I must get outdoors to work. Did so, and soon got better. We moved on to our farm where we now reside, 38 years ago. Then I got along fairly well by hiring help to do all the heaviest work, as soon as we could make enough to pay them. I learned to do the studying, the directing, laid out the work, kept everything in order and moving, and did myself mostly easy jobs, like riding on a spring seat. Thus in due time we succeeded quite well, and the out-of-door employment gave me moderately good health. But after a few years we began to make so much on our little farm that public attention was attracted, and I was urged to write for leading agricultural papers. And about this time farmers' institutes began in Ohio and several other States, and I was asked to help at them. I didn't want to do this work as it would take me from home, and, of course, my farming would suffer as a result. But the demand was strong, and soon I found myself away from home all winter long, speaking two or three times a day, breathing bad air in the halls, living irregularly, often traveling nights, and putting in every spare hour writing articles for the papers. Then on top of this was the constant worry over trying to keep the farm in as good order and producing as well as when I could give my full time to it. I did so want to keep my practice up to my preaching. At home I worked when the weather was fine, and rushed in to write when it rained, as well as at night. This wasn't so much to make money as that all this business had come to me, and I did not like to give any of it up. One hardly needs to tell that the result, some ten years ago, was—

A Complete Breakdown]

I had so much ambition and push that I kept driving on after nature had given several danger signals. In fact, I did not consider them at all—hadn't time. The end came when I was in New York. The doctor said I was in a critical condition. But I surprised him by getting up long before he expected,

from sheer will power, and then started for home by easy stages; kept up until I got there, then I was sick indeed. Would gain some at times, then be worse again, until life became a burden that I was really anxious to lay down. Our good old doctor seemed powerless to help me much. I remember writing two articles in those dark days when I was flat on my back, so hard was it for me to give up. My pen had almost to run itself. I hardly knew what I was writing. At last I urged our doctor to tell me frankly if I could ever again be as well as I had been before. He replied that he didn't think I could; that my kidneys were worn out, liver was in bad condition, I had serious prostatic and bladder troubles, rheumatism, piles, etc. He said that he could patch me up a little from time to time perhaps, but there was no chance for a cure; that one should bear these things philosophically, as they came to all and there was no help for it. Now, do you know he could not have said anything that would have done me more real good? Up to that time I had faith in a first-class

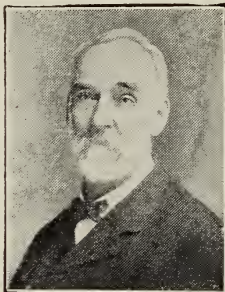
looked so completely beaten that I really felt sorry for him. And he said: "Terry, I don't see how in the world I could have been so mistaken in your case." He was not mistaken. If I had gone on living in the old common way it would have turned out just as he said. Probably 99 men out of 100 would have died just as he laid out for them to do. I was obstinate. I have never recognized any such word as "fail." To-day my kidneys are as good as any man could ask for. Every organ is in ideal order. I have the strong, vigorous, quick pulse of a young man. Have not had a trace of piles, rheumatism, or constipation for several years. In fact, I am sound and well in every way. Breathing, eating, sleeping, working—all are genuine pleasures. I really do not think I ever enjoyed as perfect health before in all my life as I have during the past five years. And, wonder of wonders—

I am Still Gaining

Right living is naturally slow in bringing results; but they are certain, and the best of health will come in due time. Do you wonder that I am enthusiastic? Haven't I earned the right to be? Now, you will find no idle theories or fads in the following pages. I shall tell you what I have done and know. I am going to lead you gradually to improve your ways of living and gain splendid health. Then, barring accident, there is no reason why you may not live long, 20 or 30 years longer than people generally do, and enjoy life fully all the time. Few indeed know what fine health really is. We have slowly drifted away from simple, proper, natural ways of living. As a result we have diseases and ills almost without number, and our lives are much shortened. The truth along these lines has not been realized by many. It has been practically hidden by much that was wrong. But now let us get down to business.

If you are ailing, as most people are, you can cure yourselves same as I have myself, and as thousands of others have done. You can become so well as not to know what it is to have an ache or pain or bad feeling. I will tell you just how to do it. If you are well now, or when you get well, you can keep so by continuing the same simple, natural, healthful way of living. I have long been urged to write a book of this kind, but have held off until years of personal success and study give me the right to speak quite positively. It is my aim to make these pages entirely reliable, a sage guide for busy people who haven't the time to work for years sifting truth from a mass of error. This book is most earnestly dedicated to all the people of America.

T. B. TERRY.



MR. T. B. TERRY
In his sixty-seventh year

physician. I thought he could cure one when he was sick. His words knocked out all of this feeling, and I paid him up, really in pretty good spirits. Why? Well, it thoroughly aroused what little will-power I had left. I said to myself, "I don't know what I will do, but I know that I will not die. I am going to get well in some way."

Where there is a Will there is a Way

I began to study this matter of health and proper living for all I was worth. Of course, I was slowly working my way up, making mistakes, but gradually gaining. It was with much pleasure that I met our doctor one day years after, on the street. I was stepping off like a boy, just as I felt. The doctor

Mr. Terry's book is now ready for delivery. Price, cloth-bound, \$1.00; or with a year's subscription to "Gleanings in Bee Culture" for \$1.50

THE A. I. ROOT COMPANY, . . . MEDINA, OHIO

GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio

H. H. ROOT, Assistant Editor

E. R. ROOT, Editor

A. L. BOYDEN, Advertising Manager

A. I. ROOT, Editor Home Department

J. T. CALVERT, Business Manager

Entered at the Postoffice, Medina, Ohio, as Second-class Matter.

VOL. XXXVIII

FEBRUARY 15, 1910

NO. 4

EDITORIAL

By E. R. Root.

OUR readers will be interested in quite a valuable communication in this issue, p. 124, from Raleigh Thompson, furnishing indisputable proof showing how bees are guided sometimes by scent to new pastures.

"ON TO HIS JOB."

THE picture of Geo. S. Demuth, foul brood inspector for Indiana, on p. 112, indicates a remarkably pleasant face. If it is a true index of his general character (and we believe it is), he makes an ideal inspector, because he has all kinds of people to handle. Mr. Pouder's interesting article shows that he, Mr. Demuth, is "on to his job."

THE COVER DESIGN.

ITALIAN bees are doubtless the native *Apis* of the peninsula of Italy. Roman writers made mention of bees and honey from the very earliest times, and it is reasonable to suppose that these were of the same variety as the Italian bee of to-day. The Romans attributed long life to the use of honey as one of their chief foods. The design on the cover shows an early Roman bee keeper preparing to hive a swarm.

THE HEAVY SNOWS AND CLOVER.

THE heavy amount of snow that seems to cover almost the entire northern States has spread a protecting mantle over the young clovers of last fall. This will mean much to their growth this coming summer. In this connection, it is pleasant to recollect that we have generally had a good flow from clover following a winter in which snow covered the ground almost the entire period of cold weather.

DOES ALSIKE OR WHITE CLOVER CAUSE BLOATING IN CATTLE?

SOME days ago a correspondent wrote us asking this question; and as we were not able to give authentic information we referred the matter to our Ohio Agricultural Experiment Station at Wooster, Ohio. L. H. Goddard, the chief of the department of co-operative experiments, replies:

Your letter of the 22d, regarding alsike or white clover causing bloating in cattle, is received. Reply-

ing thereto, I would say that, when cattle eat heavily of any succulent crop, such as the clovers or rape, they are subject to bloating. I do not call to mind any special experience with alsike clover, but have had quite a little experience with the ordinary medium red clover. Quite a number of cattle are lost every year from this trouble in the cattle-pasturing areas of Southwestern Ohio. By watching the herd, using a proper admixture of dry feed, and in rare cases the trocar and cannula, the most of the loss can be avoided.

L. H. GODDARD.

Wooster, Ohio, Jan. 25.

If any of our subscribers are able to give any information further than the above we shall be pleased to hear from them. So far we have had no report of white clover causing any bloating, and we doubt somewhat whether it would do it owing to the fact that cattle would not be able to get enough of it at any one time.

THE AUTOMOBILE VS. THE HORSE FOR OUT-APIARY WORK.

VERY soon we shall have several articles on automobiles for out apiary work. The time has arrived when one can buy a good serviceable machine for about the price of a good horse and buggy or horse and wagon. A machine will make trips to outyards in one-fourth the time it would take a horse, and will be capable of carrying loads up to 500 pounds. Of course, there are auto trucks that will carry two or three tons, but they cost several times more than a horse and wagon.

We have no ax to grind, no agency; and as we have had considerable experience ourselves in handling machines we can perhaps give the reader some hints on how to purchase and how to handle a machine after he gets it. This we shall do in a series of short articles.

The time is coming, if it is not already here, when the automobile will enable the bee-keeper to carry out more easily W. Z. Hutchinson's injunction to "keep more bees," that is to say, he can have more outyards, and, what is more, spread them further apart, thus securing a wider acreage of bloom. With the machine he can go to an outyard twenty miles away in the time it would take him to go to a yard five miles away with a horse and buggy; and, what is more, the self-propelled wagon is not afraid of stings. It can be driven right among the bees, gentle or cross, and be loaded at the most convenient point without danger of a general spill or mix-up.

For the reader's present information we would advise him not to buy some new make simply because the price is low. There are several standard makes that have been on the market for years, first class in every respect, that can be bought for \$500 and under. Then if one knows how to make the selection he can purchase a number of second-hand automobiles, practically as good as new, for from \$175 to \$250. But to make the horseless carriage a success the owner must learn to be his own chauffeur; must understand something of the general principles of a gas engine, and employ a little automobile sense if not horse sense. More anon.

LOOKING BACKWARD; A. I. ROOT'S EARLY BEE-KEEPING EXPERIENCES; THE BREAD THAT WAS CAST UPON THE WATERS COMING BACK TO-DAY.

THE reader will, perhaps, be interested in the discussion between F. Dundas Todd and the editor in this issue, on page 122. No wonder Mr. Todd could find nothing in any of our current literature on the subject of giving bees meal or flour candy direct. After reading his article we recalled some of A. I. Root's early experiments away back in the 70's—how he tested this and that kind of candy; how he mixed flour and meal of various sorts into the candy; how he "scorched" his syrup and killed his bees. The result of all these experiments was given in this journal at the time. All this took place when the present editor, though a lad, was learning his A B C's.

A. I. Root, during the early 70's, could think of nothing but bees. His business of manufacturing jewelry had reached such proportions that he found it necessary to seek rest and recreation outdoors. Well do we remember how, as a boy, we went to Cleveland with him to look up books on bees; how we followed him on bee hunting expeditions; on tramps across the fields to see what the bees were working on.

Langstroth paid him a number of visits at Medina, and well do we recall the interesting chats A. I. Root had with that father of American bee keeping. Langstroth was a charming conversationalist, and we could have sat at the feet of this Gamaliel hour after hour. We have wondered many times since what it would be worth to-day if we could have had these talks taken down in shorthand, because Langstroth drew on his rich and varied experience in bee culture when he was developing and perfecting the hive and system that revolutionized bee culture throughout the world.

Then there used to come to our home such men as Dr. C. C. Miller, Mr. G. M. Doolittle, Prof. A. J. Cook, and other celebrities. At the table, almost the entire conversation was bees—bees for breakfast, bees for dinner, bees for supper, bees everywhere and all the time except when A. I. Root was attending to the jewelry business up town; but his heart was elsewhere.

He took nothing for granted, but tested

every thing in the yard. No wonder his advice was eagerly sought, because during the few years that he gave a large part of his time to his bees he exploited almost every new field.

He made the first perfect honey-extractor that had ever been sold. You should have seen the first machine. It was a rare combination of a tin can, wooden cross-arms, and an old apple-paring machine for gearwork. Later was developed the beautiful all-metal Novice extractor of to day.

He was one of the first to see that Langstroth had blazed the way for the entire world. He adopted the Langstroth hive and dimensions after having tested every form of frame and hive. He was the first to bring out the one-pound section honey-box. He tried indoor and outdoor wintering. One winter he covered every hive with a big pile of manure. It was not altogether a success. Another winter he packed the hives with straw; later on he began to follow J. H. Townley, of chaff-hive fame.

Along in the early days news came across the water of the invention of comb foundation. A. I. Root was convinced that this was a great step forward. He could hardly eat or sleep, so eager was he to get up a machine by which he could make what we then called "artificial foundations." He employed Alva A. Washburn, an expert machinist, to make him dies. In the mean time Mr. Root tried flat plates, small ones at first, and then larger ones. He had type faces made, and began the work of setting up the type and locking it up in forms. He tested every scheme then known of making comb foundation. He was the first to make foundation with a paper midrib. Later he tried thin veneer wood, and, last of all, wire. Mr. Washburn finally brought out an embossed pair of rolls that were almost as perfect as those made to-day.

It was during this period that A. I. Root built a double-walled bee-house, walls 12 inches thick, filled with sawdust. During the summer he used this for extracting, and during cold weather for wintering bees. But his indoor scheme was not altogether a success. When he adopted the J. H. Townley method of wintering in chaff he adopted what is in use to day, so successful all over the United States.

As we go back to those early days we think of the long series of experiments conducted by A. I. Root in trying to winter bees in a greenhouse. His plan was to "educate" his pets to fly out inside the greenhouse and go back into the hive. He put out rye meal, and partially succeeded in getting the bees to take it and return to the hives; but hundreds, yes, thousands of them, bumped their heads against the glass in the vain effort to escape, and the majority of them never returned. But he did succeed to some extent in getting them to visit the flowers that he had out, and go back to the hives.

We also recall how, in these early days, he tried wintering in a house-apiary. He con-

structed a double walled hexagonal building that we still have; then put a stove inside of the building. The bees all had access to outdoors, and, theoretically, the scheme looked as if it might be a brilliant success. The stove would keep the inner room warm, and also the colonies; but the experiment, like some others, was not altogether a success. The bees were over stimulated, and he finally came to the conclusion that artificial heat was worse than nothing.

The manufacturing jewelry-shop during that time was being converted over into a wood-working shop upstairs. First a foot-power saw was put in operation; later a power saw was attached to a windmill; and many and many a time did the writer turn in and help while A. I. Root made bee-hives. During part of this time, at least, he was writing for the *American Bee Journal* under the *nom de plume* of "Novice." These articles in both periodicals not only stimulated a demand for a full account of his experiments, but led to a call for bee-supplies. A modest little catalog was gotten out in 1873 and '4, advertising the "Simplicity" bee-hive, "Simplicity" bee feeder, "Novice" all-metal honey-extractor, metal-cornered frames, "artificial comb foundations," and dovetailed one-pound section boxes. But the demand for bee supplies grew at such a pace that the unreliable windmill failed to keep up with the orders, and a steam-engine was put into commission. It was not long before the little shop was running night and day. Larger quarters were urgently needed, and it was plain to be seen that the jewelry business up town must be sold and a new factory put up near the railroad track. But the new building, 40x100, two story and a basement, took so much capital that it was rumored that A. I. Root would be "busted" before the year was out that he had "bit off more than he could chew;" and it was, indeed, a serious problem as to whether he would be able to make ends meet. But his honesty, a big asset in his favor, had never been questioned; money came to his rescue from unexpected sources, and you know the sequel.

Most of this early experience that laid the foundation for his manufacturing interests, GLEANINGS IN BEE CULTURE of to-day, and the A B C and X Y Z of Bee Culture, occurred during the early 70's. Indeed, we may say that A. I. Root's best work occurred between the years 1870 and 1880. It would take a volume to record all his experiments. It is needless to say that many of them resulted in failure, and the world knows that many of them were successful. This early work cost him thousands of dollars, but the money was well invested. Fortunately for the writer and GLEANINGS IN BEE CULTURE, as well as the A B C, we were an eye-witness to practically all of this early experimental work. To have seen it, to have been in and around it, to have had knowledge of the failures as well as of his successes, is a heritage of which we feel indeed proud. While we were only a lad then, it can never be forgotten. It could not be otherwise, for A. I.

Root's enthusiasm knew no bounds. Many a time have we seen him throw up his hat in the air from the very exuberance of his enthusiasm, especially when some experiment "panned out" well. Nothing would do but that every member of the family would have to go out into the yard and see. He was a regular hobby-rider when he got started, and sometimes his friends said of him that the hobbies ran away with him.

Many and many a time when answering questions to-day we have used the knowledge of this early experimental work of A. I. Root's, some of it over thirty five years ago. For example, a correspondent had just patented a foundation having paper for a midrib. He was very enthusiastic about it, and thought it was going to work a revolution. Remembering well that A. I. Root had been all over this, that bees many times would reject the foundation with a paper midrib, we felt it our duty to tell our correspondent the plain truth, and we did. At another time our friend Danzenbaker got up a valveless smoker, and even went so far as to patent it. Going back in memory we recalled the time when A. I. Root made just such a smoker, and how he sold them by the thousand. Then when Mr. Todd desired to know something about giving bees nitrogenous food in the hive, those early experiments came back to mind again, and a reference to the back volumes of GLEANINGS soon brought the whole thing back vividly as if it were yesterday. These are only samples from the storehouse of those early days, and GLEANINGS is profiting by it even to-day.

Later.—A proof of this was sent to A. I. Root for suggestions or corrections. In reference to the feeding of rye meal in the greenhouse he says:

Just a word in regard to the feeding rye flour in the greenhouse, alluded to in the above. At that time I was losing many colonies by "spring dwindling," and sometimes these contained valuable queens that it was quite an object to save. I figured this way: If I could construct a greenhouse that would enable me, with protection, to feed up a weak colony and get it to rearing young bees under glass, there need be no spring losses. Well, I succeeded in feeding the bees under glass, getting them to fly from the feeder back to their hive safely and build comb; but, although the queen laid eggs every day, none of the eggs were ever hatched into larvæ. Something was evidently wanting, and at this crisis I got them to working on rye meal as well as the syrup. When the first bee loaded up with pollen, and flew safely back into the hive, I sailed my cap. Next morning the eggs were swimming in the well-known milky food, and in three days or less we had a patch of larvæ growing as naturally in the month of January under glass as we usually see it in May. I declared then I was "out of the woods," and henceforth there need be no more "spring dwindling." Mrs. Root, however, suggested it was unwise to "count chickens," etc. Well, after I had a lot of young bees not only hatched under glass, but out in the sun, trying their wings and having their natural "playspell," then I called all the family to witness that my "gold-mine" was a reality. I did build up several weak colonies in this way and saved them; but it was a lot of work, and when a warm day came and the greenhouse had to be opened for ventilation, the bees got out and didn't find their way back. We put wire cloth over the ventilators, but the bees buzzed on the wire cloth, and many were lost. There are now bees kept regularly in the large cucumber-greenhouse to fertilize the blossoms. When one colony gets weak from loss of bees another is moved in while the first is put out to build up again. I at least fully demonstrated that bees can not rear brood on honey alone. They must have pollen or a substitute.—A. I. R.

STRAY STRAWS

By DR. C. C. MILLER, MARENGO, ILL.

ON PAGE 81, third full paragraph, last line but three, should it not be "Leave 10 days" instead of "2 days?" [Yes, you are right. This was a typographical error.—ED.]

IF I UNDERSTAND, p. 81, correctly, putting a story filled with European foul brood on top of an excluder over a healthy colony will not infect the latter. Is that possible? [We would doubt the wisdom of placing healthy brood over a colony that has disease, although perhaps it can be done.—ED.]

MR. EDITOR, you have expressed, page 89, what I have been quietly thinking for some time, and mustering courage to say—that whatever extra immunity to foul brood Italians may have, is not because they are Italians, but because of their extra vigor. If you get that same vigor in any other bee you will get the same immunity.

AMENDMENT to Straw, page 68. Instead of placing hives singly in a row, place them in pairs, as said on p. 68. Then to each of these pairs set another pair, the two pairs back to back. That will give you four times as many hives on the same ground as by setting hives singly, with no more danger of bees entering wrong hives in one case than the other.

GEORGE E. COFFIN, please accept thanks for that little kink of boiling a lot of splints in advance, to be laid away for another time, p. 92. Simple as it is, I wasn't smart enough to think of it. It's more troublesome to boil a few at a time as you use them. Now will some one please tell me the best temperature for the splints when being pressed into the foundation? Should they be lifted directly out of the wax boiling hot, nearly cold, or how?

I'M AFRAID, friend A. I., that when Wesley has got clear around that two acres, making the netting tight down into the ground, and banking up besides some of your biddies will still come to grief. The varmints will naturally dig down when they come to obstructions, and then work under. I'll tell you what to do: Let down the netting so that it laps over on the ground six inches outside. The varmints don't know enough to start back that far from the fence.

THE THING I always dreaded most about out-apiaries was the hauling, and I thought if I could only haul bees without horses all would be lovely. But that story of R. F. Holtermann, page 75, shows that horseless hauling has troubles too, and I'm more glad than ever that I'm down to one apiary. [Holtermann would have got along very nicely with his traction engine had it not been for the deep sand and mud. He planned all right; but no man can figure on a thunder-shower coming on at any given minute. The troubles of a traction engine in the mud are much the same as we find with an auto mobile. Just after a good smart shower the

roads are much more slippery than after an hour or two. Our friend Holtermann was trying to make a trip, rain or shine.—ED.]

A. I. ROOT, some of us may resist all the things you mention, p. 93, and yet trip up on something else. For example, some people think it almost a joke if they can evade paying on a street-car, not realizing that it is just as much stealing as if they took 5 cents out of some one's pocket. I've heard it defended by saying, "It's the conductor's business to collect it;" but that doesn't lessen your obligation to pay it. I knew a person who was always on the lookout for postage-stamps that had been used and not properly canceled, believing it all right to use them again, not realizing that to use such a stamp was stealing two cents.

WESLEY FOSTER, the wind may make a difference by hindering or helping flight, as you say, p. 69; but I suspect it makes vastly more difference by wafting the fragrance. Ever watch bees working on a basswood or fruit-tree?—always hovering on the leeward, never on the windward side, even in a very gentle breeze which can not affect their flight. I don't know, but I should think they would work against rather than with the wind; for when working against the wind the fragrance is always toling them further on, while with the wind the fragrance is always at their backs. [This is similar to the theory that E. D. Townsend employs in his argument, page 110 of this issue. You are not talking about the same thing, of course, but your reasoning is the same. We believe you are right, too.—ED.]

ERNEST, that's a good idea, page 65, to eat your breakfast food and honey cool; but for the sake of accommodating an old friend couldn't you just as well eat it at the beginning of your breakfast and still have it cooled? Spread it out on a plate and it soon cools. I'm afraid there is something wrong about this whole dessert business. Generally it means just so much added after a full meal has been taken, and that has shortened many a life. I don't want to be lonesome, and I'd like to have you live as long as I do. [It is not the general policy at our house to have dessert after a meal. We cut that out years and years ago. But the cold breakfast food that we were talking about is not strictly a dessert. It is taken as a part of the ration that sustains the natural wear and tear of the body and mind. We have tried cooling off the breakfast food by spreading it out on a plate as you suggest. The plate soon absorbs a part of the heat, and then slowly gives it back to the breakfast food. No, we want our food either *hot* or *cold*. We want our breakfast food served *cold* either at the close or near the close of the meal if we are to have honey in it. By the way, the old-fashioned cracked wheat (we crack ours in a small hand-grinder) cooked in the good old way, and served cold with thick extracted honey, beats any modern breakfast food that was ever put on the market, and it does not cost a quarter as much.—ED.]

BEE-KEEPING IN THE SOUTHWEST

BY LOUIS SCHOLL, NEW BRAUNFELS, TEX.

Texas prospects are fine, for the 1910 honey crop promises to be a big one.



THE AGE OF HONEY.

Referring to my article on this subject in a former issue, Mr. R. Kuhne, of Pomona, Cal., has this to say: "You are entirely correct in what you say concerning the age of honey. I have samples of orange honey that I have kept for the last twelve years, and the color as well as the flavor is different every year. That produced ten years ago approaches a dark brown."



OUR FIRST INSPECTION TRIP IN THE SPRING.

Every fine day that we have now we visit some one of our apiaries, many of which we have not seen since the last honey was hauled away in August or September. Our work on these trips consists in overhauling every colony, taking an inventory of the stores, seeing whether there are queens, determining the number of weak or dead colonies. Each hive has a super or two with shallow combs partly filled with honey, and these are slightly tilted up, so that a glance tells us the condition of the cluster and whether there is the right amount of honey in the brood-chambers. The weight of the supers is also noted when they are raised. If all is well the supers are put into place, and a small stone or half-brick (always used on our hives to mark the conditions) is placed on the front end of the cover. If the colony has a superabundance of stores, and can spare some for others that are needy, another small stone is placed beside the one already on the front end. If the colony should be short of stores the stone is placed at the rear of the cover. Weak colonies are designated by two stones at the center of the cover, and queenless colonies by a stone at each end. When we have gone through the whole yard we are ready to equalize; and as many as have two stones on the rear of the cover, showing that they need to be fed, receive a super from those that have two stones on the front end. The light or empty super that was on the needy colony is put back on the hive from which we took the full super. On each cover, after this change is made, one stone is then placed at the front, like all the rest which are "O. K."

All weak and queenless colonies are united. We simply set the brood-chamber of each queenless colony on top of a weak queenright colony, making sure that there are enough stores. Then a stone on the front end of the cover shows that these colonies are O. K. also. If there should be only one or two weak or queenless colonies, and if it is not possible or desirable to unite

them, they are distributed around on top of some of the colonies in the yard that are not quite as strong as others.

All this requires very little time, and yet the work is thoroughly done. By keeping part of the stores in the supers left on the hives the year round, and when the cluster is nested between the brood chamber and super (the place which the bees seem to prefer), it is an easy matter to ascertain the conditions *in a moment*, and also of the stores, without prying off a single cover of the hundreds of colonies that are examined.

We make a note of the number of colonies that are finally all right for spring count, and in this way we can know the number of bottoms and covers that may be used for some increase later; also, at the same time, we make a note of other conditions that may be of interest. The number of weak colonies and the condition of all the others is generally noted down for references, while an inventory of the stock at the yard is taken, which aids materially in planning the season's work, for we can thus know what may be needed at each place. The yard is then left for our next trip a month later.



OUR SPRING CLEANING.

February is the month when we have a regular house-cleaning in all of our yards. All the hives are leveled anew, and put on a good foundation. The hives have a fashion of leaning in all directions at the end of the season if a heavy load of honey has been stored, and especially if the soil in the yard is loose. These have to be straightened up again; new foundations for increase or other colonies are put down also. For our foundations we use broken bricks, which can usually be had for nothing. Often such heaps can be found in back yards or in out-of-the-way places. Two halves of a brick are placed under the front cleat of the bottom-board while one under the center of the back cleat is sufficient. Four bricks, one at each corner, would be better in soft ground, if there are plenty of bricks. It takes a large number for a thousand colonies.

All worthless covers and bottoms are replaced by good ones, and dilapidated fixtures are taken home for repairs and made ready for use later. Every thing about the yard is straightened up; the fences are repaired, and the roads leading to the apiaries are put in good shape for the season. Limbs that are in the way, and all unnecessary brush and trees, are cut down. The stovewood is cut out of it, and the rest is burned with all the trash which can be raked up. A wonderful change is wrought in the looks of each yard, and it pays to have every thing in apple-pie order and out of the way for the rush later. If the weather is warm enough, every thing receives another coat of paint also, except such hives as have been painted within the last year or so. Three or four weeks later the colonies are all overhauled for an inside cleaning.

SIFTINGS.

By J. E. CRANE, MIDDLEBURY, VT.

That seat and tool-box, page 699, Nov. 15, looks as though it might be a fine thing where the hives are low enough. It is much better than a one-legged stool.

If a beginner can not profit by an illustrated article, page 739, Dec. 1, on handling combs that are insecurely fastened in the frames he had better give up the business.

On these cold winter mornings, as we eat honey on our buckwheat cakes we should remember the thousands of bees that spent their lives collecting the nectar that we enjoy.

Mr. Foster, page 591, Oct. 1, has some very good ideas about marketing or selling honey. "Visit with him," the prospective buyer; "any man you are talking with should be your friend—that is, you should meet on a friendly basis." This is *golden*.

We are glad that the white-clover prospects of the country are good, page 721, Dec. 1. They are not as good in this section as we wish, for our autumn was as dry as it was a year ago. We have a much better show for alsike, however, than last year.

Page 696, Nov. 15, in the discussion on hive size I found myself, after using ten-frame Langstroth for years, drop to eight frames for comb-honey production, and again when, three or four years ago, we began extracting we went back to the ten-frame size as larger.

Dr. Miller gives his experience in feeding sugar syrup, page 590, Oct. 1, and again on page 724, Dec. 1, and he comes to the conclusion that two or two and a half sugar to one of water is about right. I agree with you, doctor, on the two-to-one basis. We have fed some 8000 lbs. of sugar this fall with about 4000 lbs. of water and 800 of extracted honey.

The Massachusetts Society of Bee-keepers invited me down to Boston the first week in December to tell them how to produce honey in New England; but after hearing President Britton tell how sections should be put on as soon as honey came freely, and that he had taken off finished sections the 19th of April, and had the past season taken 300 lbs. of comb honey from a single colony, I thought I would like to go to school awhile before I tried to teach.

On p. 622, shade in the morning is represented as being detrimental to the welfare of the colony of bees. I have some doubts

in regard to this. I have kept bees for many years in places where the sun scarcely ever shone on the hives, and have failed to notice enough difference to make it worth while changing their location; indeed, I have sometimes found my most productive colonies in such places. [Let us hear from others on this.—ED.]

Dr. Miller, page 656, Nov. 1, thinks it possible that there may be a difference in honey-dew that makes bees winter on it in some places and die in others, while the editor thinks the difference not "dew" so much to the "dew" as to the honey mixed with the "dew."

Well, Mr. Editor, here is a clear case of where you and I don't think alike. Some years ago we had a great flow of honey-dew about Sept. 1, after all white honey was gathered, and we have little other in this section. I had three large apiaries stretching from east to west about three and a half miles apart. The conditions were as nearly alike as they well could be, as it seemed to me; yet the two outside yards wintered very badly while the one between them wintered with little loss. The same appeared to be true in other locations further north. Now, isn't it reasonable to suppose that the honey-dew from oaks or elms should be quite different from that gathered from basswood? We know that that from willows is of such inferior quality that even the bees refuse to gather it when abundant. [We don't know.—ED.]

I was much interested in Dr. Miller's article on the improvement of bees, page 697, Nov. 15, and especially in the fact that he thinks the black bee of Switzerland a distinct type. I believe that these bees are no better than our own, or, at least, than the better strains of our black bees, and that the reason they are so highly prized by the Swiss is that they are better adapted to the flora of Switzerland than the Italian bees. Bee-keepers living in sections where buckwheat is the principal source of honey have told me that they get better results and more honey from the blacks than from the Italians, or from a mixture of the two. I have noticed of late, however, that the Italians are being used more extensively, even in buckwheat localities, but not, so far as I have learned, because the Italians gather more honey, but because they are better able to battle with disease. May this not be the reason why some methods of treating foul brood are more successful with some bee-keepers than with others? Mr. E. W. Alexander, whose method of treatment of the black or European foul brood was by simply keeping his colonies queenless for three weeks, used the Italian bees, I think, exclusively; and Dr. Miller, in curing his bees so successfully, also has this race. Has any one with black bees tried the Alexander method? If so, what has been the success of such trial? [Dr. Miller's bees are hybrids.—ED.]

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

DOES THE AGE OF QUEENS GOVERN SWARMING?

"Mr. Doolittle, do you think that the age of queens has any thing to do with the tendency of colonies to swarm? A bee-keeper from the East was at my house a few days ago, and he claimed that his colonies having queens only one year old were very much more inclined to swarm than those having older queens."

"I hardly think that is the case, friend Hunt; but to be sure that such a claim was right it would be necessary to know how many colonies having queens of different ages were in observation, and to know what proportion of them swarmed."

"I did not think to ask him about that. I myself think that colonies having the year-old queens are less inclined to swarm than those having two, three, or even four year old. In other words, my experience seems to indicate that the older the queens in any colonies, the more those colonies are inclined to swarm."

"Possibly you are right; but I think other conditions have a greater bearing on the swarming matter than the age of queens. Sometimes it may be one condition, sometimes another, and perhaps more than one. If there is a lack of ventilation, causing extreme heat, or any other condition which may render the hive decidedly uncomfortable, I have known bees to swarm without even beginning the construction of queen-cells."

"Well, now you speak of it I do believe this may have much to do with swarming; for one summer I had my bees in a place entirely surrounded with trees and buildings so that scarcely a breath of air could get to them, while the sun poured in on them from eight in the morning till four at night, and those colonies, while left there, swarmed to beat the band, as the expression goes."

"Again, it may be the failure of the queen to lay sufficiently. Under this condition queen-cells are built; and if the season of the year and weather conditions are all right, swarming will follow; if not, the queen will be superseded. However, more frequently it is the lack of sufficient room, or, to put it more nearly correct, lack of empty combs for the queen to lay in, that causes swarming."

"Yes, the bees begin to restrict the queen as to the number of eggs she lays, as I have sometimes expressed myself. There is a whole lot to this swarming question."

"Now let us come a little closer home in this matter. We are comb-honey producers, therefore we can look into that part of the matter. We can give room enough in the supers, but this is mostly in the shape of foundation, or only starters of foundation,

instead of fully built combs; and when the honey comes in freely, the bees can not build out the foundation fast enough to hold it; and much of that coming in from the fields is put into the brood-nest until there is not room enough for the queen to lay; and the first thing we know, under such conditions swarming begins."

"But does not a young queen assert her egg-laying proclivities even under these conditions, so the colony is slower in making preparations for swarming than a colony having an older queen?"

"After years of observation, I believe that such is the case. But just why a year-old queen should so assert is something I do not see any adequate explanation for; but I believe it to be a fact all the same; and in this we find a presumable reason why young queens are less likely to swarm than older ones. But let us not forget that more beekeepers work for extracted honey than for comb honey; and with them the case is different. That changes the condition entirely. If enough empty combs are given, the queen will not be crowded, but she will have all the space needed in which to lay; and, no matter whether she is one, two, three, or even four years old, there is not likely to be any swarming until she begins to fail."

"But do not bees swarm when worked for extracted honey?"

"Not when managed right. Quinby gave us the secret nearly half a century ago when he said, 'Hive a swarm in a box the inside of which is a cube of four feet; and if the swarm is large enough, or the ap'arist helps the bees to fill that box with comb, swarming will rarely result; but if that swarm builds comb in only 2000 cubic inches in one corner of the box, the bees will swarm in future years about the same as they would in a hive of the 2000 cubic-inch size, the empty room outside of the comb built having very little influence upon them.' It is the *amount* of empty or fully built comb that is important. My experience is that, where combs are supplied so that the queen has all the room she can use for egg-laying, and at the same time such comb supplies all the room the colony wishes for the storing of honey and pollen, such a colony will never swarm, no matter how numerous in bees it becomes, even if beyond 100,000, nor how old the queen is."

"But we can not use such a large amount of comb as this when working for comb honey."

"Correct; and now we are getting back to where we started. Because the using of lots of comb in the brood nest is unprofitable when working for comb honey, many have swung to the opposite extreme and have used very small hives. Where such hives are used it takes no very keen vision to see that the most prolific queens, usually the youngest, will fill all of the available space the quickest, and swarm the first and most often. In fact, an inferior queen might have all the space needed, and not swarm when in a hive too small for a better queen."

GENERAL CORRESPONDENCE

SOME OBSERVATIONS ON MARKETING HONEY.

Unequal Distribution; the Uninformed Bee-keeper and the Devious Methods of Some Honey-buyers the Source of Low Prices.

BY OREL L. HERSHISER.

Within the past fifteen or twenty years there has been a constant and marked advance in the price of nearly every thing the bee keeper has to purchase, including food stuffs and bee keepers' supplies. In many instances the advance has been upward of 50 per cent, as in the case of meats, dairy products, and lumber. On the other hand, there has been comparatively little advance in the price of honey. As long as the expense of consumption and the proceeds of production remain out of equitable proportion, and until the product of the apiarist has an exchange value for a just equivalent in other goods, so long ought the conditions and influences that control and make the prices of honey remain the subject of profound and earnest study and discussion by the bee keeper.

In the marketing of honey, three general classes of prices are recognized; viz., the jobbers, the wholesale, and the retail. When the dealer purchases from the producer the jobber's price is paid. The dealer or packer sells at wholesale, and the grocer or other distributor sells at retail.

Sales made by the commission merchant are made on the jobbing basis if of considerable volume, in which case the producer receives the jobber's price less commission. It is almost needless to say that the producer who sells through the commission merchant nearly always receives the lowest of all prices. If the producer jobs his honey by direct sale to the dealer there is opportunity for a clear understanding as to the price, and he is in position to know just what he is to receive.

By reference to some recent market quotations it is noted that "No. 1 and fancy comb honey would bring from 14 to 16 cts. delivered, such honey going to the retail grocery trade at an advance of from 2 to 2½ cts. on the prices quoted." It may be inferred that this advance, amounting to approximately 15 per cent, is the usual gross profit when selling at wholesale. Lastly comes the retailer's profit of from 25 to 75 per cent on his purchase price when sold to the consumer.

The retail trade does the greater part in distributing, and the dealer and manufacturer furnish a market for the larger part of the product. It is recognized that the wholesale merchant, purchasing in the jobbing way, and the retailer, are valuable factors in trade,

and that they present avenues through which a large portion of the world's production, of all kinds, can readily reach the consumer.

It is also recognized that prices of most commodities are fixed by the inexorable law of "supply and demand," which, like the laws of the Medes and the Persians, "altereth not." However, there are some exceptions, which, when closely studied, are found to prove the rule. Supply and demand, in these later years, have come so much under artificial influences, such as trusts and combinations in restraint of trade, either under contract or by tacit agreement, that there may be scarcity because of goods withheld from market to create a corner and oversupply because of artificially glutting the market to "freeze out" a rival. Sometimes, when there is a normal supply on the whole, markets in one quarter are glutted while in another locality they are bare, due to unequal distribution.

The honey market is often adversely influenced by merchants purchasing from the unwary producer his crop of honey at a ruinously low price and selling the same at retail, as a leader, at a small profit. Thus, recently one of the leading stores in Buffalo was retailing a fancy grade of comb honey at 17 cts. which, no well-informed bee-keeper will dispute, is far too low for this season of scarcity of fancy honey. A leading store, by one or two purchases of considerable volume from uninformed bee keepers, can thus exert a powerful adverse influence on the market.

The devious methods of some honey-buyers are fruitful of market depression. The aim seems to be to create an artificial competition of the producers rather than to work the other end of the market by establishing prices at the normal level. The dealer writes to his list of honey-producers asking the amount of his crop, and for a quotation of his price. After a few lots have been purchased of the producers making the lowest quotations, the scheme is to try to establish the low price by reporting large supplies and an easy market in consequence. If every producer would seek reliable information of the editors of bee journals or crop committees, and not make a price until well informed, and then, in answer to all such queries, quote the price that is advised; and, instead of disclosing the amount of his crop, ask "How much do you wish at that price?" and stick to his price, I think it would have a salutary effect on market conditions.

Another ruse, recently noted, was to make as low an offer as possible, and yet have hope of getting some shipments, with the luring and innocent looking offer that "if I can do better than this, or if market justifies it, or, in other words, if I have to pay others more, I will pay you more likewise," making final settlement afterward. Of course, out of a large list of bee-keepers enough, shipments are likely to be made to relieve the dealer of any obligation to pay a higher price, even if the crop and conditions were

such as to have caused a considerable rise. Bee keepers are advised to analyze and consider thoroughly their correspondence with dealers, and to consign to the fire all such conditional offers and the accept-by-return-mail sort as well.

One of the greatest obstacles to be overcome, if better prices are to be realized, lies directly at the door of a goodly number of bee-keepers. To illustrate, one of our best bee-keepers, having sold his crop of honey early in the season, wrote an urgent letter asking me to send him a sample of a certain grade of honey and to quote price. In reply a price was named, not above current quotations, as it was not strictly a table honey in this market. The answer received was to the effect that he could not purchase at that price—that he thought he had sold out at too low a price, and that he would lose money by purchasing. That the crop was sold out early in the season, and the price established at a figure so low as to preclude paying the jobbing price to fill small orders, shows plainly where much of the trouble lies.

Hear ye, you bee-keepers who are producing fine honey and selling it retail at jobbing prices! can you not see that you are working an injustice to the whole fraternity without any benefit to yourself? for if you are obliged to or prefer to sell at jobbing prices, then you can get as much from the dealer, and you will be money ahead in the end if you charge the wholesale or retail price according to the classification of your customer, and the amount sold for what you dispose of in a small way.

You know that honey is nectar secreted in the blossoms of numerous plants, and gathered, stored, and ripened by the bees; that it is the purest and most wholesome of sweets; that it comes direct from the hands of the Creator, perfect in every particular, while all other sweets require the intervention of man, machinery, and usually the use of chemicals in their preparation for use; that physicians frequently prescribe honey for their patients, and deny them sugar and other artificially prepared sweets, which plainly shows that scientific men who know, regard the latter as unwholesome and injurious in many cases where the former is wholesome and beneficial.

Kenmore, N Y.

Continued in next issue.

THE HIGH COST OF LIVING.

Too Many Retailers for the Number of Producers; Co-operative Selling.

BY OLIVER FOSTER.

The steadily increasing cost of living has aroused the people to such an extent that the problem is a national issue. Secretary Wilson has given some of the vital facts in the case. The corporations and trusts are not entirely to blame, though they are no doubt responsible for the failure of Congress to revise the tariff downward. This end of

the argument concerning high prices has been the subject of thousands of newspaper articles and editorials. What I say will not deal with this, but will be along the line Secretary Wilson took when he stated that the retail price of meat was thirty-eight per cent above the wholesale. The waste of time and effort in the small shop is very great, and should have the serious consideration of all thinking people.

The retail business in meat and groceries is tremendously overdone. The statement of commercial agencies, that ninety-five per cent of men in business fail is easily believed when one looks at the men who go into the grocery business because they have the mistaken notion that any one can keep store. Farmers, gardeners, tradespeople, etc., buy a stock of groceries for five or six hundred dollars, and proceed to embark in business. The unfitness of this class of men "to make a go" of retailing is shown by the statement when I approach them on the honey proposition: "Oh! we can't sell honey, for we never have any call for it." And no wonder. Their idea that business would come to them unsought shows *why* they can't sell.

The man who is a real merchant is always willing to give a little time to look into every proposition to see if there is a chance to *create a demand* for the article among his customers. If the goods are choice, such a merchant will display and push the line among his customers.

But most of the retailers are of the small variety, not having enough business to keep themselves, their help, nor their horse busy half the time. It costs just as much whether the ice box holds two tons of meat or only a few links of sausage; the ice melts just as fast, and ice costs money during the whole year. There are something like seven hundred retailers of meats and groceries in Denver. One hundred could do the work better at a great saving in operating expenses. To have the most economical methods in operation we need something like the public-utility corporations in charge of the retail meat and grocery business of cities. I do not think a large corporation in control of the retailing business would be likely to lower prices unless forced to do so by legislation, but the business would be carried on in a more sanitary way. The ice-boxes could be larger, and the order that comes out of system in management would give us better food.

The great number of retailers who are merely existing in the grocery business could more profitably join the ranks of the producers. The producers could very easily form co-operative associations with city stations for distribution. The lines that could be handled might include milk, eggs, cheese, butter, honey, and produce of all kinds. This is practicable now, as many creamery companies composed of farmers are selling all these kinds of farm produce from their city stations. As yet nothing has been done to bring about a more economical management in the distribution of meats and gro-

ceries; but perhaps when the farmers are selling the bulk of their produce through the associations they will launch into the retailing of these too, and will own their own packing-houses and also turn wheat at a dollar a bushel into breakfast food at ten cents a pound.

Denver, Col.

THE VALUE OF VISITING,

Some Good Ideas Picked up from Various Bee-keepers, and Passed on to Others.

BY F. GREINER.

The time of the year has come when we can give a little more attention to the theoretical part of our business. We have three ways: 1. Reading and studying; 2. Attending bee-keepers' conventions; 3. Visiting other bee-keepers. A great many bee-keepers do not avail themselves of all these means, particularly the last. In a conversation with some friend we can sometimes learn a valuable lesson, or start our thinking faculties in an altogether different direction with benefit to ourselves. By rubbing up against others I have picked up some good things of late, and I wish to tell the readers of GLEANINGS about it.

FRESH FOUNDATION THE EASIEST FOR THE BEES TO WORK; DIFFERENT METHODS OF PUTTING IN FOUNDATION.

By dear lessons many of us have found out that bees are loath to take hold of old foundation, particularly if it has been in the hives previously, and not drawn out. My aim has always been to procure freshly made foundation in the spring, and not put it into the sections till the honey season has arrived. The untouched starters in kept-over sections I always cut out and replace with the fresh article.

In talking with S. D. House, of Camillus, N. Y., I found that he had noted a great difference in the willingness of his bees to accept and draw out old as against new foundation; and his practice is to fill his sections with fresh foundation the very day he wishes to put them on his hives. If the conditions are such that the bees will begin to work on the wax at once, a great deal is gained, as all of us well know, and this is what Mr. House is aiming at. Bees are always more inclined to go to work on old foundation when placed in the brood-chamber; and the difference, he says, between the new and old article is not so apparent.

Before we had the Daisy or similar handy comb foundation-fastening machines we secured the starters in the sections by dipping into melted resin, etc. We could clean and fill our wide frames (section-holders) with the made-up sections any time during the dull season when we had plenty of time. When we needed the supers, the starter could be quickly put in, handling the sections by fours. Since using the Daisy foundation-

fastening machine we can not follow this practice, and we therefore have no way of putting starters into sections by machine when said sections are in wide frames with separators nailed on the frames. If I understand it, the Root Co. is offering a wide-frame super in which the separators are a separate fixture. The Betsinger super, with its screen-separators, which Mr. House is using, is so constructed also. Such supers offer the advantage that they may be gotten ready during the winter for use in the apiary except putting in the foundation.

Mr. Betsinger's method for putting foundation into sections was as follows: His wide frame held three sections. This was placed upon a board to which were fastened three square blocks a little less in size than the inside of the section, and so spaced that the sections fitted nicely around them. These blocks were a little less in thickness than half the width of the section. The properly cut and well-fitting foundation was next placed upon the blocks and inside of the sections. With a little ladle some melted wax was dipped up, and with it the sheets were secured to the wood, allowing the hot wax to run along the top of the section as well as part way down the sides.

This process seemed to me a rather slow one. I also objected to so much wax being used inside of each section. Mr. House improved on the plan inasmuch as he fastens the foundation with a hot iron plate, a *la* Daisy, but without any machine. The iron plate is attached to a handle, the whole thing resembling a huge putty-knife. Several such are kept heating over a small kerosene-stove, and are changed as often as necessary. [This is just the principle of the Root foundation-fastener—Ed.]

We who use wide frames with separators nailed on, or a so section-holders, must handle the sections one by one when putting in the starters or sheets of foundation, and after that we have to put them in the frames. Here we run into another snag. Sections do not always fold absolutely square, and are not rigid enough to admit putting in exactly fitting sheets of foundation. Mrs. Bacon, of Waterloo, overcomes this by cutting her foundation sheets slightly bias, or just a little narrower at the bottom of the sheet, using a pattern to cut by. I would make a miter-box so that I could cut 12 or 15 sheets at one operation. Of course the strips of foundation would have to be of just the right width, or about $4\frac{3}{4}$ inches wide for the 4x5 sections. I think I shall practice this plan if I ever use full sheets of foundation in my sections.

THE PUTTY-KNIFE FASTENER.

The House method of using the putty-knife-fashioned plate instead of a machine commends itself for several reasons to those whose super fixtures admit of such a plan. When putting in starters or full sheets with the Daisy we have to work very lively. A section must not be left on the machine a moment longer than is necessary to operate the hot plate. Sometimes the foundation

becomes warm and limp before we can go through with the operation. This gives us trouble. Such does not and can not occur when we practice Mr. House's method. We may leave the sections on their form any length of time. In fact, it is a good idea to use several forms and leave the sections after the starters are put in a little while (long enough for the wax to harden) before taking them off.

One may also employ inexperienced help. An eight-year child may put the wide frames on the forms and drop the sheets of foundation in while the experienced hand attends to the work of fastening the foundation with the hot plates.

A SOLAR EXTRACTOR WITH A LAMP IN COMBINATION.

When visiting my brother, G. C. Greiner, last fall I noticed his solar wax-extractor. It was built on the Doolittle solar plan with some alteration. A fine-meshed screen was supported just over the iron bottom, upon which the comb to be rendered was placed. Under these conditions it was found that old Sol did not have power enough to do a thorough job, and so he added a lamp to the outfit, thus making it complete. With this machine he secures good-sized cakes of fine wax which do not need recaking. However, he uses only cappings in the machine, and they are first washed free from all honey, and then dried.

WHAT IS THE NEED OF A HONEY-STRAINER?

Among other subjects discussed at this meeting was the honey-strainer. I asked him where his honey-strainer was. (I mistrusted that he had not observed or did not appreciate the great (?) progress that had been made in that line.) Without a word he pulled a glass jar of honey from a crate at random and held it up to the light. The honey was water-white, and most beautiful. Not a speck nor an air-bubble was in it or on top of the honey. "Has any living man or woman ever produced any thing finer than this with any strainer that you know of?" he asked.

"I think not," I answered.

I had to acknowledge that a great deal of energy seemed to be uselessly expended in building complicated honey-strainers and putting honey through them with no visible effect or the slightest improvement over honey not strained but simply drawn through the faucet from the bottom of the tank. If the tank is narrow and tall, nearly all foreign matter can be easily removed with a spoon when it is full. Some honey will be dipped up at the same time; but if we put the skimmed matter into a pail, after a little time the larger part of the honey may be poured out by holding the pieces of comb, scum, and sealings back with the spoon. A better way would be to use a small tank having a faucet at the bottom. After all the skimmed matter has been collected in this, and after giving time, about all the honey could be drawn off.

I have strained my honey through a cloth,

but never obtained a perfect article. Metal sieves can not do better. In fact, it is an impossibility to free honey quickly from the very fine particles of wax which it always contains. A little time does it. Honey drawn from the faucet at a summer temperature flows easily and without even leaving air bubbles on the surface. I fail to understand why such men as Mr. Alexander, for instance, recommend straining honey. That portion of honey which is drawn from a tank last, no matter whether a strainer has been used or not, is not fit for bottling. The tailings of several tanks may be run into one small tank and given a little time to clear. In the end there will be very little left but what is fit for bottling.

A BETTER MILLER FEEDER.

An improvement in the Miller feeder was suggested to me by W. F. Marks. All who have used this feeder have undoubtedly observed that there are times, particularly when the hive is not leveled perfectly, when a little of the syrup is inaccessible to the bees. Let the feeder be so made that the bottom inclines to the center just a trifle. The bees can then take out the very last drop.

FINDING QUEENS IN LATE FALL.

There seems to be a feeling among quite a number of bee-keepers that purchasing queens in the fall is not advisable. Some expressed themselves in strong terms, saying they did not want late queens as a gift. The fact is, it is any thing but a pleasant job to take a colony apart in order to find the old queen. The bees are cross, therefore difficult to keep in subjection. The combs are heavy, and are often set to leaking, thus attracting robbers. Mr. House offers this solution: Drum or drive the bees into an empty hive-body placed on top of the hive containing the colony to be dequeened. When the bees have clustered they are dumped out in front of their hive after adjusting an entrance-guard. The queen is thus found easily, no honey set to leaking, etc., and the new queen is then introduced or run in as is thought best.

Naples, N. Y., Dec. 18.

[We believe it is generally acknowledged that fresh super foundation is more easily worked than that which is a year old. Some discussion a few years ago seemed to show this quite plainly.]

As to whether extracted honey needs a strainer depends on conditions. We have been in quite a number of large extracting-yards where honey was produced by the carload; and many (if not a great majority) of those big producers use honey strainers and settling-tanks both—a strainer to catch the coarser particles, like slices of cappings, brood, and drowned bees, and a settling-tank to remove the finer particles that can not be secured in any way but by the force of gravity. The strainers undoubtedly do save time in that they catch the great bulk of foreign material that would go in with the honey; and where said honey is conveyed quite

a distance through a tin conductor, a strainer is indispensable. Many producers, to save handling, do use such a conductor from the strainer to the settling-tank. You will remember that Mr. Alexander conveyed his honey from the extracting-house through a tin pipe on a slight downward grade to a large tank some distance away. As he produced mainly buckwheat honey, or buckwheat mixed with aster, a dark honey like this does not need a settling-tank nearly to the extent that a light honey does.

Queens reared late in the summer or early fall may not be the equal of those reared early in the season; but there is no reason why they *may* not be just as good, providing the cell-building colonies are fed liberally during the time when the cells are being supplied with royal jelly. But this is not all. Liberal feeding alone will not produce strong vigorous queens. A colony *must* be put into condition where it will be queenless and broodless—that is, fairly *cry** for a queen before it will do its best work in cell-starting and cell-building. An up-to-date queen-breeder who knows these tricks of the trade can, if he chooses, furnish just as good queens in late summer as during the early part of the season; but the probabilities are that the average queen-breeder does not furnish late-summer stock that is equal in every respect to that which is reared earlier when conditions naturally are more favorable. It is too much work.—ED.]

DO BEES STEAL EGGS?

Laying Queens that Developed from Stolen Eggs.

BY E. C. FRAZIER.

On page 780, Dec. 15, I find some assertions made by Mr. Samuel Simmins, with which very few practical bee-keepers of America will agree. I am very certain that at one time I knew of bees stealing eggs. Of course I did not see the act accomplished, but I will explain.

In the year 1879 I lived at Sacramento, McLean Co., Ky., the first time I tried to use movable-frame hives. I first bought a farm right to make and use the N. C. Mitchell "Long-idea" movable frames. I made my own hives and frames, and, what a fit! and, of course, being green, for I had never seen a comb transferred, I mashed bees, combs, and a queen. I transferred five hives for myself that season. I killed one queen in transferring, and knew when I did it. In handling the comb I mashed her accidentally; and when I ran the bees into the new hive I dropped the dead queen down between the

frames of comb. The next morning she was pulled out on the alighting-board. Those were the brown German bees.

Mr. Mitchell taught in his books that, if there were eggs or very young brood, the bees would raise a queen; but these bees did not do it. I left the colony alone for some time, as it was very strong. In the meantime I had sent for two pure Italian queens. When these came I clipped them and introduced them in two of the hives, and in due time I had Italian bees flying from both hives; and now comes the strange part to me. The colony whose queen I mashed was dwindling. I examined it and found all the brood hatched with the exception of some drone brood in worker cells. I closed the hive after looking through it, and examined the rest of the hives that day; but in a few days I went back to the queenless hive and opened it again; and, imagine my surprise when, on the edge of a comb, I found a fresh queen-cell about half-finished with royal jelly in the bottom, and a young larva floating in the jelly. I hastily closed the hive and beat a retreat in double-quick time, as I had no veil or gloves.

Surprise No. 2 came in about three weeks. My father was at my house, and we were out looking at the bees, when he said: "Ras, you have a fine queen in that hive; look! Isn't she a beauty?" And she was as pretty an Italian queen as one would wish to see. She had come out to mate. In about 20 minutes she alighted on the alighting-board and went into the hive with a white-looking thread attached to her.

About a month after that time, father and I looked into the hive where we saw the young queen enter, and there were several young Italian bees crawling over the combs, and a nice lot of brood, capped and uncapped, and eggs in the hive. I told father about the hive being queenless, and he said, "Oh! they stole an egg from one of the other hives; they sometimes do that."

The two Italian queens I bought were the first and only ones brought into that country at that time and for some time after.

I wish to ask Mr. Simmins and other bee-keepers some questions:

Did you or any other practical bee-keeper ever know or hear of the eggs of a laying worker hatching any thing but a drone? Mr. Simmins says, "I can see no other possible explanation than that laying workers are responsible." Now, I have taken the young larvæ from as many as half a dozen queen-cells, and replaced them with eggs of the laying worker, and all from one cell, and drones developed in them every time. The experiment was tried on a hive that had cast a prime swarm two days before, while I have tried the same experiment three or four times with the same results. A bird or fowl of the female sex can and does lay eggs without the male; but all know the eggs will not hatch; but the laying-worker bee can and does lay eggs that hatch drones; which, however, are useless because they can not fertilize a queen-bee. If any one thinks they can, let him winter a hive or two of them

*By this we mean put up a roar of distress—distress for what seems to be a hopeless condition. When a bar of freshly grafted cells is given, their chyle-secreting glands being surcharged because there has been no brood to feed, they immediately jam the cells with chyle food. A well-fed baby has an immense advantage over one that was poorly fed at the start, whether it be an insect or animal.

and try them with virgin queens in the early spring before any other drones begin to fly. I have tried this experiment twice, but have failed to get a single queen fertilized.

Adams, Tenn.

PURE STOCK VS. HYBRIDS.

Is it not Better to Breed from the Best Colony in the Yard, Irrespective of Race?

BY FRANK C. PELLETT.

Inasmuch as my experience with the Italian bees has been so different from that so often expressed in your columns, I feel impelled to offer a word in favor of the hybrid. Every one seems to have the idea that the only thing to do is to Italianize and keep only pure bees, or as nearly so as his locality will permit. I am inclined to the opposite view. With about one-third of my apiary of the yellow bees, they have not, so far, proved as satisfactory as the darker ones. Fifteen of the queens originally came from a breeder well known, and one who, being a regular advertiser, probably has sold queens to a large part of the readers, so we feel sure the fault can not be with the strain. However, not all the queens came from him, and we can see no appreciable difference between those queens (or, rather, colonies) and the other yellow colonies.

There has been much said in these columns about the gentleness of the Italians; but the crossiest colony we have are yellow bees; and the gentlest (or as gentle as any) are dark hybrids. Do not understand me to say that all our yellow ones are cross, as some are not; but we have no dark bees that will come as near driving the whole outfit out of the yard as the above mentioned colony of yellow ones. Then the best honey producers we have are hybrids and they make the cleanest combs with less propolis and less brace-comb. We can take off a super and feel pretty sure that none of the combs are fastened to the separators. The worst bees to daub propolis over the sections and attach the combs to the separators are in almost every case among the yellow ones. The most expensive queen we ever had was a failure excepting in the color of her offspring. They were unusually yellow; and if beauty is worth any thing she was worth the price; but the colony finally died late in spring from dwindling. There is only one thing that, in my experience, has been in favor of the pure Italian; and that is the ability to resist the bee-moth, which they seem to be able to do better than the darker bees.

MOTHS DESTROYED THE EMPTY COMBS.

Speaking of the bee-moth leads me to tell some more experience. Last winter we purchased a number of colonies of bees that were short of stores. These we fed until after fruit bloom, when they had quite a little honey on hand, and we supposed them safe for the season. However, June was

cold and wet, with hardly a day when the bees could get out until the last week in the month, and, before we knew it, our colonies were dead. As we run only for comb honey, surplus combs are rare with us, and we had read somewhere that, if placed two inches apart, the moths would give no trouble; so we took a lot of empty hives and put in occasionally a comb between empty frames. We lost the whole lot. Had we been a little more careful to look after them, and placed them over our yellow bees, we could have saved the combs.

From our experience we have decided that, instead of requeening with pure Italian stock, it would be better to do so from the best all-around stock in the yard, regardless of color, race, or origin. There have been so many Italians introduced into this section that it would be difficult to find any of the black bees not more or less mixed with them.

Atlantic, Iowa.

SETTING BEES OUT OF THE CELLAR.

The Effect of the Wind on the Drifting of the Bees.

BY E. D. TOWNSEND.

In a Straw, June 15, 1909, Dr. Miller says: "It may be that 'if there happens to be a heavy wind it is liable to force the bulk of the flying bees toward the leeward side.' I don't know. I never took bees out in a heavy wind. I couldn't be hired to do so."

I understand perfectly, doctor, that you never took bees from the cellar during a windy time or you would not have left the impression in the foregoing that bees drift to the leeward in their first flight after setting out of the cellar, especially if they have not wintered well.

Many bees leave their hive without any apparent thought of returning; or, in other words, they do not mark their location. In this case, if a heavy wind is blowing it sometimes seems as if nearly all the bees in the air are being blown off to leeward; and one would think they would surely enter those hives where the bees are flying so thickly. They won't, though. It is something like this: As the gust of wind lets up, the flying mass of bees will hover around the row of hives at the leeward side of the yard. They actually expect (according to their actions) to enter this leeward row of hives. However, as they hover in front of this row the "homing hum" is blown away from them, and the bees hear only the call of the bees in the hives to windward and they fly over to this next row only to hear the hum or call of the bees entering the hives further on to windward. This moving over to the windward is continued until the throng is drawn over to the windward side of the yard. The *windward* side, not the leeward, then, is more likely to draw more than the proper share of bees.

Remus, Mich.

MODERN APICULTURE IN MEXICO.

BY CARL LUDLOFF.

From "Mexican Industries," Monterey, N. L. Translated from the Spanish by Geo. W. Dithridge.

At a time not far distant the art of modern apiculture will be one of the most important branches of agriculture in the republic of Mexico. Up to the present time this industry has been carried on in an antiquated manner, generally by the Indians, as a business exclusively in the hot zone of this country, while in the more elevated temperate regions it is regarded as a diversion wholly without a business prospect.

The cause of this apicultural situation is that the tropics in general produce a class of honey suitable only for exportation, and used principally in the great industries of the countries of the North; but rarely does one encounter a quality of honey appropriate for the table, while the wax, secured by the crude methods employed, is of much greater value than the honey. It is to be inferred that even modern bee-keepers have not been disposed to improve the ancient methods, nor to establish their colonies on modern scientific principles.

On the other hand, the very remarkable and singular conditions of climate in the temperate and cold zones of Mexico up to to-day have rendered it almost impossible to protect the bees in any known hive. It is considered to be not only certain but beyond remedy that the colonies of bees are to dwindle to almost none, or to disappear entirely during the winter season; and bee-keepers are obliged to commence almost entirely *de novo* every year with the remnants of their colonies. This is the reason why extensive bee-yards are unknown in this region, those of from ten to forty hives being considered rare exceptions. The yards, as a general rule, contain no more than from one to five colonies, usually in a most deplorable condition. That such a style of bee-keeping can offer no inducement to any one to waste time, labor, and money in it needs no assurance or explanation. But the honey produced in this zone is of such excellent quality, and the quantities gathered by the bees so great, in spite of every obstacle, that it remains only to discover a method of management to render it possible to develop apiculture to a state at least equal to that of other countries. Such difficulties have been wholly overcome elsewhere.

Before discussing this question it seems necessary to limit ourselves to the consideration of good honey and of inferior honey. The zones of these honeys are found at certain elevations above the sea. Commencing at the ocean or gulf shore, the inferior honey is found to a height of 5000 feet, corresponding to the region adapted to the cultivation of sugar cane. In this region the life of the colonies is irregular because of the issue of swarms at any time of the year, more or less, and this appears to be the principle object of bee energy. The accumulation of

honey is an object of secondary consideration, because the bees are accustomed to encounter it in a undance at all times. They have neither time nor inclination to accumulate quantities of honey. This is well enough, but it is not exactly what we want.

From the zone of sugar-cane culture, divided by an inclined plain of several hundred feet of elevation, being the transition zone, which is the habitat of the maguey or pulque plant (*Agave Americana*), commences with exactness the zone of fine honey. In this region a plant known by its Indian name of "chayotillo" (*Scisios edulis*) is found in vast numbers, blossoming in the rainy season. At the same time, there is also found in this zone a plant of the family *Cucurbitaceæ*, and this is the appropriate Mexican plant for honey. In every locality where this plant is in abundance, apiculture may be regarded as a sure and certain business. In addition to the chayotillo, the mesquite trees and shrubs yield in the beginning of spring a splendid harvest of honey. The honey of the chayotillo belongs in the highest grade of honey known in all the world, and surpasses the famous honey of Colorado and California. On this account apiculture in this elevated section of Mexico should be esteemed a very remunerative business, but only by the use of hives and strains of bees entirely adapted to the climate. This subject will be considered further in the March issue of this journal.

Vencedora, Chih., Mex., April 30, 1909.

THE BULK OF THE HONEY COMES FROM WITHIN ONE MILE OF THE APIARY.

There is some discussion in the bee journals of late as to how far bees go for pasturage; and I agree with those who claim that most honey is gathered within one mile from the apiary. I have an outyard which is about three miles, at least not exceeding $\frac{3}{4}$, from my home yard, and I have more than once secured a fair honey crop there while I got but little honey in my home yard.

WALD C. CONRAD.

New Braunfels, Texas, Oct. 20.

STRONG QUEENS FROM TWICE-GRAFTED CELLS.

Noticing the article, page 763, Dec. 15, on breeding strong queens, by J. W. Savage, I will endeavor to relate my experience. On the 10th of June, 1909, I found two colonies that had small queens. They looked like runts or as though they were half starved. I experimented by removing the queen from one of them, and in a few days I examined the colony and found six queen-cells about $\frac{3}{4}$ inch long. I removed the larvæ, putting in their places younger or smaller ones, and trimmed the cells back so they were not over a third as long. Before putting in the next larvæ I smoothed the royal jelly down with the ivory tip of a leadpencil. In two days I examined and found the bees were working on the grafted cells and putting royal jelly in them. I removed the other small queen from the second colony and grafted one cell in that hive. The result was two strong and fine-looking queens; and it did me great good to see the colonies grow to two strong ones. One colony produced 186 lbs. of first-class honey, and the other 158 lbs.

My experience proved beyond doubt that the Nektart and Perkins method is all right, and our thanks are due to Mr. J. W. George for bringing it before the public. I tried almost the same method fifteen years ago in Washington, but did not trim the cell back, and did not have as good success as this time. The two colonies mentioned belong to Mr. J. B. Perrine, Blue Lakes, Idaho.

Jerome, Idaho.

S. F. BAILEY.

The Red Catalog for Bee-keepers

tells all about

That FAMOUS TRIO

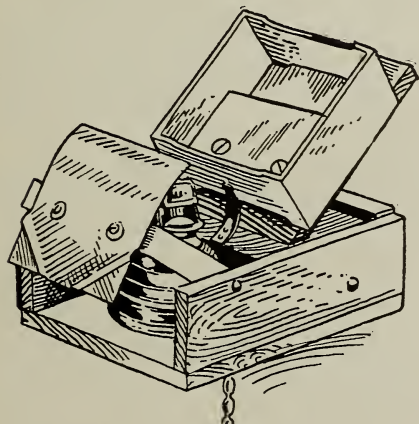
Falcon Foundation

has reached the perfect state . Our special methods and careful workmanship, with the best of pure Beeswax, has placed it ON TOP.

Falcon Sections

None sanded better.
Fold perfectly.
Once a user—always a user.

Dewey Foundation-fastener



IT SPEAKS FOR ITSELF!! The most rapid and accurate fastener. It pleases hundreds of bee - keepers, and will please you. Price \$1.25; by mail, \$1.50.

And don't Forget Our Hives

Send for our 1910 catalog—it's FREE—the RED CATALOG. It can't be lost—everybody in the household will know where THAT RED CATALOG is.

Agents who sell FALCON Supplies at FALCON PRICES:

Other
Agents
Wanted

The Fred W. Muth Co., 51 Walnut St., Cincinnati, Ohio.
Deroy Taylor, Lyons, Wayne Co., N. Y.
E. Gressman, Hamburg, N. Y.
Harry L. Atherton, Caneadea, Allegany Co., N. Y.
Cull & Williams Co., 180 Washington St., Providence, R. I.

We Pay the Highest Price for Beeswax
Write us for Shipping-tags

W. T. Falconer Manufacturing Co.

Jamestown, New York, U. S. A.

Honey Markets

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchant. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage, and other charges, are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

EASTERN GRADING RULES FOR COMB HONEY.

FANCY.—All sections well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel-stain or otherwise, all the cells sealed except an occasional one, the outside surface of the wood well scraped of propolis.

A NO. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

NO. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

NO. 2.—Three-fourths of the total surface must be filled and sealed.

NO. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

NEW COMB-HONEY GRADING-RULES ADOPTED BY THE COLORADO STATE BEE-KEEPERS' ASSOCIATION.

NO. 1 WHITE.—Sections to be well filled and evenly capped except the outside row, next to the wood; honey white or slightly amber, comb and cappings white, and not projecting beyond the wood; wood to be well cleaned; cases of separated honey to average 21 pounds net per case of 24 sections, no section in this grade to weigh less than 13½ ounces.

Cases of half-separated honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparated honey to average not less than 23 pounds net per case of 24 sections.

NO. 1 LIGHT AMBER.—Sections to be well filled and evenly capped, except the outside row, next to the wood; honey white or light amber, comb and cappings from white to off color, but not dark; comb not projecting beyond the wood; wood to be well cleaned.

Cases of separated honey to average 21 pounds net per case of 24 sections; no section in this grade to weigh less than 13½ ounces.

Cases of half-separated honey to average not less than 22 pounds net per case of 24 sections.

Cases of unseparated honey to average not less than 23 pounds net per case of 24 sections.

NO. 2.—This includes all white honey, and amber honey not included in the above grades; sections to be fairly well filled and capped, no more than 25 uncapped

cells, exclusive of outside row, permitted in this grade, wood to be well cleaned, no section in this grade to weigh less than 12 ounces.

Cases of separated honey to average not less than 19 pounds net.

Cases of half-separated honey to average not less than 20 pounds net per case of 24 sections.

Cases of unseparated honey to average not less than 21 pounds net per case of 24 sections.

COLUMBUS.—Prices firm, but demand light. Fancy white comb, 16; No. 1, 15; No. 2, 13.
Feb. 5. **EVANS & TURNER CO.**

BOSTON.—We quote fancy white comb honey at 16 to 17; No. 1 ditto, 15 to 16; fancy white extracted, 9 to 10; light amber, 7 to 8; amber, 6 to 7. Beeswax, 32.
Feb. 5. **BLAKE-LEE CO.**

KANSAS CITY.—The receipts of both and extracted are not large; demand fair. We quote No. 1 white comb, 24 sections, \$3.50 per case; No. 2 and amber, 24 sections, \$3.25 per case; extracted, 7½. Beeswax, 25 to 30 cts. per lb.
Feb. 4. **C. C. CLEMONS PRODUCE CO.**

CINCINNATI.—The market on comb honey is almost bare. The demand is considerably lighter than it has been for the past few weeks. It is selling for about \$3.50 per case of 24 sections. Amber honey in barrels is selling from 6½ to 6¾. Sage honey in 60-lb. cans is selling at 8½. Beeswax is fair at \$33.00 per 100 lbs. These are our selling prices, not what we are paying.
Feb. 5. **C. H. W. WEBER & CO.**

ST. LOUIS.—Since our last our honey market has not changed. We quote fancy white comb honey at 17; choice amber, 14 to 15; dark or granulated, 8 to 10. Broken or leaking honey sells at much less. Extracted white, from Colorado and the Pacific coast, in five-gallon cans, 8 to 8½; amber, 7½ to 8; Southern honey, choice amber, in barrels, is quotable at 6½ to 7; in cans, 7½. The market, however, is bare of Southern honey. Beeswax at 30 cts. for choice pure; all impure and inferior less.
Feb. 5. **R. HARTMANN PRODUCE CO.**

NEW YORK.—Comb honey is fairly well cleaned up, some small lots still arriving, but not large quantities. There is a fair demand for No. 1 and fancy white, while lower grades find very poor sale. We quote No. 1 fancy white, 14 to 15; off grades, 11 to 13, according to quality; dark and buckwheat, 10 to 11. The market on extracted honey of all grades is rather quiet. While there is a fair demand, it is mostly for small lots, and in round lots quotations are generally shaded. While there is no overstock, receipts are large enough to meet all demands. We quote California water-white, 8½ to 9; white sage, 8; light amber, 7 to 7½; amber, 6½; West India, 62 to 64 cents per gallon, duty paid; Southern, receipts very light, and what little arrives sells at from 60 to 75 cts. per gallon according to quality. Beeswax is steady at 29 to 30.

Feb. 4. **HILDRETH & SEGELKEN.**

Honey Markets continued on page 5.

THEY OUGHT TO KNOW

BEE MEN TELL US OUR MUTH SPECIAL DOVETAILED HIVE IS THE ONLY REALLY WORTH-WHILE ONE ON THE MARKET. BUILT RIGHT IN EVERY WAY--CAN'T WARP. THE HONEY BOARD FEATURE MAKES IT DIFFERENT. YOU CAN USE THE PORTER BEE ESCAPE TO REMOVE THE HONEY WITHOUT CUTTING A STING, AND THE LUMBER AND WORKMANSHIP ARE BETTER. MADE FOR US BY FALCONER, THE GREATEST BEE HIVE MAKER IN AMERICA. . . . OF COURSE YOU'RE GOING TO LET US FIGURE WITH YOU ON SUPPLIES THIS YEAR. CATALOG? SURE JUST FOR THE ASKING.

THE FRED. W. MUTH COMPANY

"THE BUSY BEE MEN"

51 WALNUT STREET

CINCINNATI, OHIO

Cincinnati



CHAS. H. WEBER

The advantages of ordering your supplies from us are many.

1st.—WE CAN DELIVER goods in much less time than dealers located at small local points.

2d.—You pay only minimum freight or express charges from our place. No dealer is better situated than we are to save you transportation charges.

3d.—We carry large, well-assorted stocks of all standard Bee Supplies. We sell ten to twenty carloads annually, and, by purchasing for cash, we secure the lowest possible prices, and can give our customers every possible consideration.

4th.—OUR LONG ACQUAINTANCE with the needs of bee-keepers enables us to keep on hand large stocks of standard goods. Our business was founded many years ago; and in connection with the line we now handle manufactured at Medina, Ohio, we have the confidence of bee-keepers in a measure enjoyed by but few supply houses.

5th.—OUR SUCCESS AS DEALERS in bee-keepers' supplies, and in honey, seeds, and other merchandise, is due to the scrupulous care we exercise in the handling of all inquiries and orders. We give prompt attention to all requests for information on bee-keeping generally, to any request for prices on supplies needed, as well as probable time it would require to deliver goods. We solicit your inquiries and orders.

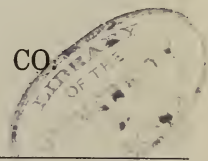
CATALOG.—Our new catalog for 1910 is ready for mailing. If you have not already received one, and want a catalog at once, send us a request. All customers of 1909 will receive a copy as soon as we can mail it, without request.

If you are in want of a catalog at once, please give us the names of any other bee-keepers in your vicinity who would likely be interested. We shall appreciate the favor; and when opportunity offers we shall reciprocate the same. REMEMBER THAT WHATEVER YOU DO FOR US WILL NOT BE OVERLOOKED HERE, AND YOUR OWN INTERESTS WILL BE ADVANCED BY THE SAME.

DISCOUNT.—Save money by ordering your supplies at this time. Orders with cash received during February are subject to a discount of two per cent.

Cincinnati, Ohio.

C. H. W. WEBER & CO.



GLEANINGS IN BEE CULTURE

E. R. ROOT

Editor

A. I. ROOT

Editor Home Department

H. H. ROOT

Assistant Editor

J. T. CALVERT

Business Manager

Department Editors:—Dr. C. C. Miller, J. E. Crane, "Stenog," Louis H. Scholl, G. M. Doolittle, Wesley Foster, R. F. Holtermann.

\$1.00 per year. When paid in advance: 2 years, \$1.50; 3 years, \$2.00; 5 years, \$3.00

POSTAGE IS PREPAID by the publishers for all subscriptions in the United States, Hawaiian Islands, Philippine Islands, Guam, Porto Rico, Tutuila, Samoa, Shanghai, Canal Zone, Cuba, and Mexico. Canadian postage is 30c per year. For all other countries in the Postal Union add 60 cents per year postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. The notice should be sent two weeks before the change is to take effect.

DISCONTINUANCES. We give notice just before expiration, and further notice if the first is not heeded, before discontinuing. Subscribers are urged to renew promptly in order to avoid interruption in receipt of GLEANINGS; or, if unable to make payment at once, to advise us when they can do so, which will be considered as an order to continue. Any one wishing his subscription discontinued should so advise us upon receipt of expiration notice and he will not be annoyed by further notices.

HOW TO REMIT. Remittances should be sent by Draft on New York, Express-order or Money-order, payable to order of The A. I. Root Company, Medina, Ohio. Currency should be sent by registered letter.

AGENTS. Representatives are wanted in every city and town in the country. A liberal commission will be paid to such as engage with us. References required.

FOREIGN SUBSCRIPTION AGENTS

Foreign subscribers can save time and annoyance by placing their orders for GLEANINGS with any of the following authorized agents, at the prices shown:

PARIS, FRANCE. E. Bondonneau, 56 & 58 Ave. Felix Faure, Paris 15. *Per year, postpaid, 8 fr.*

GOODNA, QUEENSLAND. H. L. Jones. Any Australian subscriber can order of Mr. Jones. *Per year, postpaid, 6/7 p.*

DUNEDIN, NEW ZEALAND. Alliance Box Co., 24 Castle St. *Per year, postpaid, 6/7 p.*

CONTENTS FOR FEBRUARY 15, 1910

EDITORIAL.....	97	Queens from Cells Twice Grafted.....	110
Snow and Clover.....	97	Foul-brood Law of Indiana.....	111
Alsike Causing Bloat.....	97	Demuth, G. S.....	112
Automobiles for Outyards.....	97	Bees in the Garret.....	113
Editor's Early Experience.....	98	Robber-traps.....	116
STRAY STRAWS.....	100	Bee-louse.....	116
Bees Working with the Wind.....	100	Foul-brood, European.....	119
Breakfast Food.....	100	Absorbent Cushions.....	120, 121
BEE-KEEPING IN THE SOUTHWEST.....	101	Fall Uniting.....	120
Age of Honey.....	101	National Convention, Place of.....	121
Scholl's Inspection Trip.....	101	Substitutes for Pollen.....	122
SIFTINGS.....	102	Flour Candy.....	123
Shade on Hives.....	102	Honey for Cooking.....	124
Honey-dew for Bees.....	102	Bees Flying Straight for Nectar.....	124
Improvement of Bees.....	102	Alexander Plan for European Foul Brood.....	125
CONVERSATIONS WITH DOOLITTLE.....	103	Alexander Yard, Conditions at.....	126
Age of Queens and Swarming.....	103	HEADS OF GRAIN.....	127
GENERAL CORRESPONDENCE.....	104	Outdoor Colonies Lose Bees.....	127
Marketing Honey.....	104	Carbolic Acid in Spraying-solutions.....	127
Cost of Living.....	105	Weeds, to Destroy.....	127
Visiting, Value of.....	106	Moving Bees in Winter on Sleighs.....	127
Fresh Foundation Best for Bees.....	106	Do-little Plan of Non-swarming.....	128
Putty-knife Fastener.....	106	Syrup Made of Candy.....	128
Solar Extractor with Lamp.....	107	Bees Chilled at Entrances.....	128
Honey-strainer, Need of.....	107	New Mexico for Bee-keeping.....	128
Feeding Queens in Late Fall.....	107	Syrup that will not Candy.....	128
Bees Stealing Eggs.....	108	Distance of Bees from Road.....	128
Pure Stock v. Hybrids.....	109	Rats, to Destroy.....	128
Setting Bees out of the Cellar.....	109	OUR HOMES.....	129
Mexican Apiculture.....	110	POULTRY DEPARTMENT.....	131
Honey Gathered within a Mile.....	110	Poultry Secrets.....	132

Extracted Honey Wanted

We are always in the
market.

If you have any to sell, mail
small average sample to

**NATIONAL
BISCUIT COMPANY**

Purchasing Department,
Washington Blvd. and Morgan St.

CHICAGO, ILLS.

Honey Markets continued from page 2.

ALBANY.—The honey market is very slow, with small stocks of any thing in straight grades of either clover or buckwheat. Prices are nominally 15 cts. for white clover in good condition, and 10 to 12 for any thing else. Extract d is quiet at 7 to 7½ for buckwheat and mixed, and 7½ to 8 for light grades. Beeswax, 32 to 33 cents per pound.

Feb. 5.

H. R. WRIGHT.

LIVERPOOL.—There is a quiet market with no change in prices. We note sales of Haiti at \$5.28 to \$7.20 per cwt.; Chilian, \$5.28 to \$7.44; Peruvian, \$3.84 to \$4.80; California, \$8.16 to \$7.92; Jamaican, \$6.72 to \$5.52; Haitian, \$5.52 to \$7.20. Beeswax is quiet, with sales of Chilian at \$37.68 to \$39.32 per cwt. Nominal values for other kinds are as follows: African, \$32.67 to \$33.88; American, \$33.88 to \$37.51; West Indian, \$37.51 to \$36.28.

Jan. 25.

TAYLOR & CO.

CINCINNATI.—This market is now well cleaned up on comb honey, and this is the best indication for a healthy demand for this year's crop. Extracted honey has a good sale. Fancy white clover and sage in 60-lb. cans, two cans to the crate, sells at from 8½ to 9½; amber extracted in barrels, 6½ to 7½ according to the quality and quantity bought. For good choice yellow beeswax we are paying 30 cts. cash delivered here, or 32 in trade.

Feb. 4.

THE FRED W. MUTH CO.

INDIANAPOLIS.—There is a good demand for the best grades of both comb and extracted honey, and jobbing houses are well supplied. Practically no honey is now being offered by producers, and jobbers are selling No. 1 and fancy white comb at 17 to 18; best extracted, 9 to 10, according to quantity taken at one shipment; poor demand for amber honey, and no established prices. Producers are being paid 29 to 31 cts. for good average beeswax.

Feb. 5.

WALTER S. POWDER.

WE WILL BUY AND SELL HONEY

of the different grades and kinds

If you have any to dispose of, or if you intend to buy, correspond with us.

We are always in the market for WAX at highest market prices.

HILDRETH & SEGELKEN

265-267 Greenwich St., 82-84 Murray St.
NEW YORK

CHAS. ISRAEL & BROS.

486-490 Canal St., NEW YORK

Wholesale Dealers and Commission Merchants in

Honey, Beeswax, Maple Sugar and Syrup, etc.

Consignments Solicited. Established 1875.

Cook's Honey-jar!

(Not Dr. Cook who discovered the North Pole)

But J. H. M. Cook, who keeps the Bee-supply House at 70 Cortland St., New York City. Sells the Best and Cheapest Honey-jar with patent air-tight sanitary stopper. Send 10c (half the postage) and you get a sample jar. Catalog free.

CHICAGO.—The market is doing fairly well on good comb honey, which continues to 16 cts. per lb. Fancy clover or basswood would bring 17, but none is offered. Extracted is rather quiet at unchanged prices, the white grades ranging from 7 to 8, with basswood and white clover bringing a little more than the outside price if not mixed with other things—amber, 6 to 7. Beeswax is steady at 32 for prime yellow.

Feb. 5.

R. A. BURNETT & CO.

BUFFALO.—There has been very little change in the price of honey for some time. The demand is fair for good white-clover and buckwheat comb. Demand for extracted buckwheat ought to be good soon. No. 1 to fancy white comb, 14 to 16; No. 2 white comb, 9 to 11; No. 1 buckwheat comb, 10 to 12; mixed comb, 10 to 12; No. 1 white extracted, 7½ to 8; buckwheat extracted, 7 to 7½; jelly-tumblers, 80 to 90 cts. per dozen. Beeswax, 28 to 30.

Feb. 5.

W. C. TOWNSEND.

DENVER.—We quote our local market as follows: Strictly No. 1 white comb honey, per case of 24 sections, \$3.50; No. 1 light amber, \$3.25; No. 2, \$3.00; white extracted, 7 to 8½; light amber, 6½ to 7½. We pay 25 cents per lb. for clean yellow beeswax delivered here. We are about sold out on comb honey; and if any Western bee-keepers have any desirable lots we could handle them for them.

Jan. 25.

COLORADO HONEY-PRODUCERS' ASSO'N,
F. Rauchfuss, Manager.

ZANESVILLE.—While there is some demand for honey the market is still a little quiet. Producers are offering a little, but no large lots. At first hand producers should receive about 15 cents for No. 1 to fancy white-clover comb, or honey of similar quality, and for best white extracted 8 to 9 f. o. b. here. In small lots at wholesale, prices will run 1½ to 2½ cts. per lb. higher than these prices on comb, and 1 to 2 cts. higher on extracted. This market demands best grades, there being little call for any thing else. Producers are offered for clean beeswax 29 cts. cash or 31 in exchange for bee-supplies.

Feb. 5.

EDMUND W. PEIRCE.

GLEANINGS IN BEE CULTURE

Devoted to Bees, Honey, and Home Interests

Established 1873

Circulation 35,000

72 pages Semi-monthly

A. L. BOYDEN, Advertising Manager

ADVERTISING RATES

Twenty-five cents per agate line, flat. Fourteen lines to inch.

SPACE RATES. To be used in one issue. One-fourth page, \$12.50; one-half page, \$25.00; one page, \$50.00.

Preferred position, inside pages, 30 per cent additional.

Preferred position, inside cover, 50 per cent additional.

Outside cover page, double price.

Reading notices, 50 per cent additional.

Cash-in-advance discount, 5 per cent.

Cash discount if paid in 10 days, 2 per cent.

Bills payable monthly.

No medical or objectionable advertising accepted.

Column width, 2½ inches.

Column length, 8 inches.

Columns to page, 2. (Regular magazine page.)

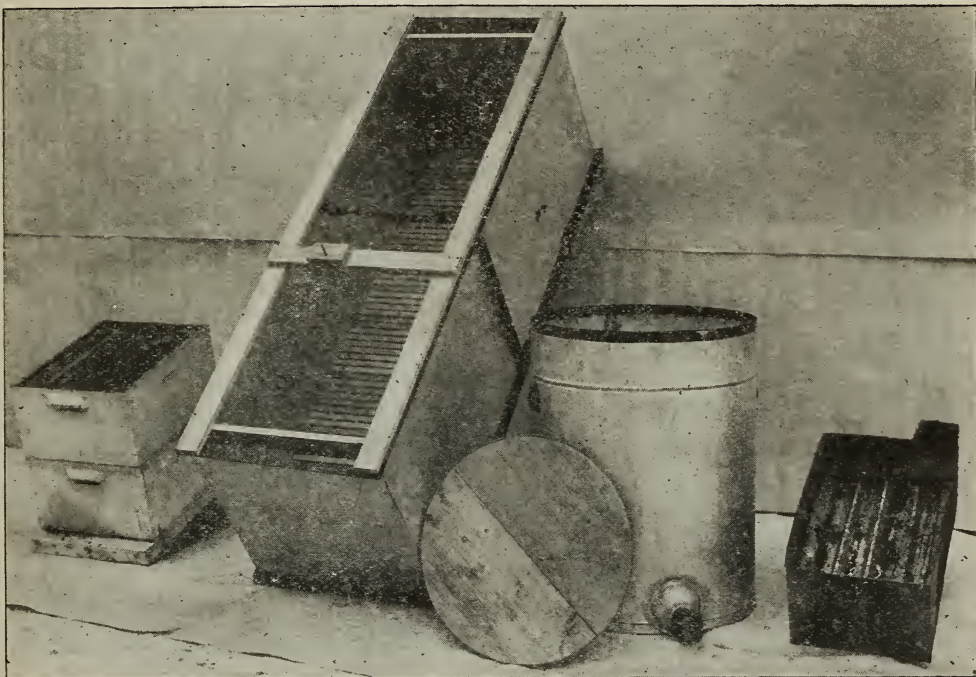
Forms close 10th and 25th.

Address Advertising Department, Gleanings in Bee Culture, Medina, Ohio.

INDEX TO ADVERTISEMENTS

Agricultural Impl's.	Real Estate..... 34	Land for Sale.	Railroads.
Allen, F. L..... 24	Situations Wanted..... 34	White, J. W..... 23	Burlington R.R..... 18
Savings Deposit Bank... 29	Wants and Exchanges... 34	Miscellaneous.	Roofing.
Bee-smokers.	Comb Foundation.	Boyden, R. B..... 22	United Factories Co..... 21
Danzenbaker, Francis... 9	Dadant & Sons..... 36	Commercial Democracy 23	Seedsmen.
Bee-supplies.	Cream-separators.	Hampshire Paper Co., cov.	Bell Seed Co..... 27
Blank & Hawk..... 17, 31	Galloway, W..... 22	Nurserymen.	Berry, A. A..... 26
Cooley, D..... 7	Sharples Separator Co... 16	Call's Nursery..... 9	Burpee, W. A..... 26
Crane, J. E., & Son..... 12	Fencing.	Gardner Nursery Co..... 27	Crawford Co., M..... 28
Duby, H. S..... 12	Am. Steel and Wire Co.. 20	German Nurseries..... 28	Darling & Beahan..... 28
Falconer Mfg. Co..... 1	Brown Fence Co..... 21	Hill, D..... 26	Fairview Seed Farm..... 26
Hilton, Geo. E..... 9	Colled Spring Co..... 21	Hubbard, T. S..... 26	Farmer, L. J..... 28
Hunt & Son, M. H..... 11	Kitselman Brothers..... 21	Lovett Nursery Co..... 29	Iowa Seed Co..... 28
Jepson, H. H..... 7	Ward Fence Co..... 21	Ottawa Gardens..... 29	Kellogg, R. M..... 27
Leahy Mfg. Co..... 12	Gas-engines.	Roesch, L. & Son..... 28	Kirchoff, W. E..... 26
Minnesota Bee Sup'y Co. 17	Galloway, Wm..... 22	Rogers, H. C..... 28	Maule, W. H..... 26
Muth Co., F. W..... 2	Honey-dealers.	Scarff, W. M..... 26	Olds Seed Co..... 12
Nebel, J. & Son..... 11	Hildreth & Segalson..... 5	Sheerin..... 28	Pembroke Seed Co..... 27
Pelroe, E. W..... 12	Israel, C., & Bro's..... 5	Storrs & Harrison..... 27	Shumway, R. H..... 27
Pouder, Walter S..... 17	Muth Co., Fred W..... 2	Texas Seed and Flo. Co.. 9	Snell, F. A..... 9
Rea Bee and Honey Co.. 12	National Biscuit Co.... 5, 19	Vick, James..... 28	Texas Seed and Flor. Co. 9
Root Co., Syracuse..... 11	Weber, C. H. W..... 3	Patents.	Sprayers and Pumps.
Stringham, L. J..... 8	Household Special's.	Hough, F..... 23	Brown, E. C..... 24
Toepperwein & Mayfield 8	Coward, J. S..... 23	Williamson, C. J..... 19	Hurst Mfg. Co..... 28
Weber, C. H. W..... 3	Esselburn, W..... 29	Poultry-supplies.	Pratt, E. G..... 24
Buggies, etc.	Wright, E. H..... 23	Berry Poultry Farm..... 32	Rochester Spray Co... 24
Elkhart Carriage Co..... 22	Incubators.	Brenner, J. J..... 32	Telephones.
Murray, Wilber H..... 21	Belle City Incubator Co. 30	Clough Brooder Co.... 32	Stromberg-Carlson Co.. 21
Ohio Carriage Co..... 32	Cyphers Incubator Co... 30	Greider, B. H..... 32	Tools.
Builders' Supplies.	Des Moines Inc. Co..... 32	Lee, G. H..... 31	Bateman Mfg. Co..... 28
Chicago House Wr. Co.. 22	Gem Incubator Co..... 32	Mann, F. W..... 30	Cutaway Harrow Co... 24
Cans.	Johnson, M. M..... 31	Miller, J. W..... 31	Excelsior Garden Tool.. 24
Cook, J. H. M..... 5	Miller, J. W..... 31	Myers, F. F..... 31	Iwan Brothers..... 23
Classified Ad's.	Prairie State Incu. Co.. 30	Newbert, R. F..... 31	Potato Implement Co... 25
Bees and Queens..... 34	Racine Hatcher Co..... 31	Pratt, B. G..... 29	Rhodes Mfg. Co..... 28
Bee-keepers' Directory.. 35	Reliable Incubator Co... 30	Ziemer, A. A..... 29	Typewriters.
For Sale..... 33	Sure Hatch Incuba. Co.. 24	Publications.	Oliver Typewriter Co... 10
Help Wanted..... 34	Lamps.	Agassiz Association..... 9	Wagons.
Honey and Wax Wanted 33	Best Light Co..... 22	American Bee Journal.. 7	Electric Wheel Co..... 23
Honey and Wax for Sale 33		Farm Journal, cover.....	
Poultry..... 34		Harding Pub. Co..... 19	
		Hutchinson, W. Z..... 7	
		Northw. Farm and Home 5	

E. D. TOWNSEND



Has evolved, and put into practice during the past year, a new system of extracting honey. In the first place, the combs are freed from bees without removing them from the hives, yet no bee-escapes are used. No strainer is used, yet it is possible to can the honey as fast as extracted—entirely free from foreign matter. The cappings are thoroughly drained, then made into wax without the loss of a single pound of honey. Mr. Townsend's son and a student removed from the hives, extracted, canned, and nailed up ready for market, in 60-pound cans, 3000 pounds of honey in one day. Mr. Townsend will describe this system in an early issue of the BEE-KEEPERS' REVIEW.

The REVIEW is \$1.00 a year, but at present you can get nearly the whole volume of 1909 back numbers free if you send \$1.00 for 1910. Remember, too, that the Jones book on swarm-prevention is now being published in the REVIEW.

W. Z. HUTCHINSON, Flint, Mich.

Mr. Bee-Man:

You can save time, worry, and money by ordering your supplies for next season now.

I have a full line of Hives, Supers, Sections, Foundation—in fact, every thing you need in the apiary. If you do not have a catalog, send for one to-day.

182 H. H. JEPSON Boston,
Friend St. Phone Haymarket 1489-1 Mass.

Here I am, Better Prepared

to fill orders with The A. I. ROOT CO.'S
STANDARD BEE-SUPPLIES

than ever. Catalog Free.
D. COOLEY, Kendall, Michigan

THE
A
B
C
OF

BEE CULTURE

The only cyclopedia on bees, 536 pages, fully illustrated. Every phase of the subject fully treated by experts. Price \$1.50 postpaid; money refunded if unsatisfactory. Catalog of supplies and sample copy of our semi-monthly magazine, *Gleanings in Bee Culture*, free if you mention this paper.

Gleanings in Bee Culture, Medina, Ohio.

I. J. STRINGHAM

105 Park Place, New York City

furnishes every thing in the bee-keeping line. Our 19th catalog is yours for the asking, and we can save you money if you want bees or supplies.

Apiaries: Glen Cove, Long Island.

ANNOUNCEMENT

By Toepperwein & Mayfield

WE ARE now at our new place, corner Nolan and Cherry Streets (at the Southern Pacific Subway), ready for business. We invite the public to visit us; and we assure every one courteous and kind attention. No matter whether you are in the market for bee-supplies or not, if possible make us a call when in San Antonio. The only way for you to appreciate our immense and complete stock of bee-supplies (Root's goods, of course) is to go through our plant. Our comb-foundation factory is more complete than ever, and it will interest you to see the beeswax worked up, from the raw wax furnished, to comb foundation. Each sheet is nicely packed in tissue paper. When you get comb foundation from us you get it fresh made, which is always the most desirable for the bees. We do not have to buy comb foundation and keep it in stock from one season to the other, but always have it fresh and nice, which the bees always accept, much in preference to old foundation. Many customers ship us old foundation to work over so as to have it nice and fresh. We will send you samples which will convince you, free of charge, for your address on a postal. We can now give better and more prompt service than ever before, having experienced help and an immense stock of goods, and our own place of business. We can afford to keep a larger and more complete line of stock, and yet not charge more for our goods, as we have no rent to pay, and have our own capital. For the convenience of customers out of the city, some one will be found in our office day or night to answer long-distance calls or entertain customers who have not much time while in the city, and wish to call upon us before or after ordinary office hours. When in the city, take Nolan Street car which will let you off right at our office. We buy beeswax and honey, or work up your wax into comb foundation at a reasonable rate. Send for our illustrated catalog and price list, free for the asking.

TOEPPERWEIN & MAYFIELD.

San Antonio, Texas.

Branch—607 South Flores Street.

BEE-SUPPLIES

for North Texas

We are agents for Root's Celebrated Bee-keepers' Supplies for North Texas. By buying in carload lots we are enabled to sell at factory prices f. o. b. Dallas.

We also handle honey and beeswax. When you have any for sale let us know.

We carry the largest stocks of Field and Garden Seeds and Poultry Supplies of all kinds in the South. Catalog of all of the above lines will be sent on request. Send now, and get your order in early.

Texas Seed & Floral Company
Dallas, Texas

Alsike Clover Seed

**Small and Large Red-clover Seed
Alfalfa and Timothy Seed . . .**

All seed re-cleaned; home-grown.
Sacks 20 cts each. Write for prices
and samples. . . Catalog of apiary
supplies free.

F. A. Snell, Milledgeville, Carroll Co., Ill.

DO YOU WISH

Fruit Trees?

Call's Nurseries, Perry, Ohio, have a large stock; fine quality; prices low. . . No agents. . . Deal direct. . . Write for prices.

The Agassiz Summer School

for Adults as well
as Young Folks...

Arcadia: Sound Beach, Connecticut

Near to the Heart of Nature.
Seashore, Suburbs, and Country

In Education and Recreation.

Four weeks beginning June 27, 1910.

In Tents and Buildings.

Arrangements for Camping Parties.

Three Departments:

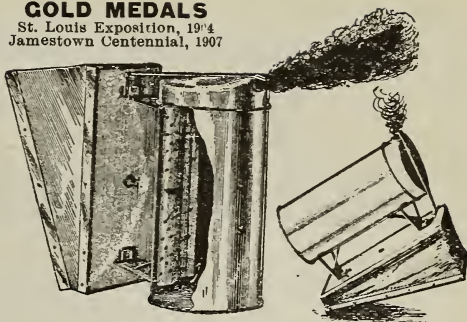
1, Professional; 2, Popular; 3, Juvenile.

Under Management of
EDWARD F. BIGELOW
with Efficient Assistants

Send 10c for "The Guide to Nature"
For Adults, giving Full Particulars.

GOLD MEDALS

St. Louis Exposition, 1904
Jamestown Centennial, 1907



DANZENBAKER SMOKER

Shown above in a standing and reclining position. In the latter the grate is under, that it may have a full head of smoke ready on the job at a touch of bellows.

The air forced from the **valveless metal-bound** bellows up and down the fire-grate gives a **combined hot and cold blast**.

The vertical grate extends, **shielding and strengthening** the fire-cup. The one-piece cap **does not clog** the **valveless metal-bound** bellows; securely braced and bolted **through cup and grate**; gives added strength. It is the **largest smoker for a dollar**.

Price \$1.00; two, \$1.60; by mail, 25 cents each extra.

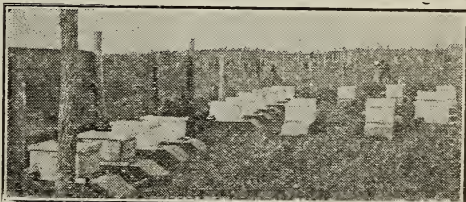
We sell Danzenbaker hives and supers with metal **propolis-shields**, and any thing in **bee-supplies**.

All of **Root's goods** at **factory prices**.

Send your address and your bee friends' for free catalog.

F. DANZENBAKER, - NORFOLK, VA.

Hilton's Strain of Bees Heard from Again



A View of Mr. Chase's Apiary

In 1908 I bought two three-frame nuclei of you, and in 1909 three more. I now have 20 good colonies ready for winter, and have taken 871 pounds of extracted honey, and they have drawn their own combs from full sheets of foundation. Hilton's strain of bees and Root's goods can't be beat, and you do sell them at factory prices.

G. C. CHASE, Robbins, Wis.

I have sold more queens and nuclei now for spring delivery than I sold last season. Send for 40-page catalog, free, with discounts for early orders on bees, queens, and supplies.

All Root's Goods at **Factory Prices**.
Send List of Goods Wanted, and Get
Net Prices. . . . Beeswax Wanted.

GEO. E. HILTON,

FREMONT, MICH.

PUBLICATIONS ON BEE CULTURE

Please use this order form by checking in the margin the items wanted

The pamphlets and booklets listed below are of more than ordinary interest:

- ☐ **My First Season's Experience with the Honey-bee.** By the "Spectator," of the *Outlook*, of New York. A ten-page leaflet detailing the experiences of this well-known writer. You will read the leaflet through before you lay it down. Free.
- ☐ **The Bee-keeper and Fruit-grower.** A 15-page booklet giving actual facts regarding the value of bees to fruit, and showing how bee-keeping may be doubly profitable to the fruit-grower. Fruit-growers are realizing as never before the necessity of having honey-bees in close proximity to their blossoming fruit. Free.
- ☐ **Bee-keeping for Sedentary Folk.** A 24-page leaflet reciting the actual experiences of an amateur bee-keeper, showing what equipment is best, points derived, etc. Free.
- ☐ **Catalog of Bee-keepers' Supplies.** Our complete catalog will be mailed free to any address on request.
- ☐ **Transferring Bees.** A 14-page booklet giving instructions and illustrating appliances. No need to keep your bees in old out-of-date hives when they can easily be transferred into new hives and earn profits for you. Price 10 cts.
- ☐ **Bee-hunting.** Gives information necessary to enable one who is active and intelligent to engage in bee-hunting with success. It is well gotten up and worth the price, which is 25 cents.
- ☐ **Spring Management of Bees.** A 14-page booklet detailing the experiences of some successful bee-keepers, and giving instructions on this oftentimes perplexing matter. Price 10 cts.
- ☐ **Habits of the Honey-bee.** By Dr. E. F. Phillips. A somewhat scientific handling of the habits and anatomy of the bee. Price 10 cents.
- ☐ **How to Keep Bees.** A book of 228 pages, detailing in a most interesting manner the experiences of a beginner in such a way as to help other beginners. Price \$1.10 postpaid.
- ☐ **The A B C of Bee Culture.** A complete encyclopedia on bees, of nearly 540 pages, fully illustrated. \$1.50 postpaid; half leather, \$2.00.
- ☐ **Gleanings in Bee Culture.** A 64-page illustrated semi-monthly magazine, the leading exponent of bee culture in this country. Ten cents per issue, but to new subscribers we will furnish it six months for 25 cents.

This sheet may be used as an order sheet by properly checking on the margin your signature, and remittance, if required.

The A. I. Root Co., Medina, O.:

Please send me the items checked above; I inclose \$. to cover the cost.

Name.....

Street Address or R. F. D.

Town.....

G.B.C. 2-15

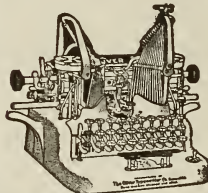
State.....

A \$100 Typewriter for 17 Cents a Day!

Please read the headline over again. Then its tremendous significance will dawn upon you. An Oliver Typewriter—the standard visible writer—the \$100 machine—the most highly perfected typewriter on the market—*yours for 17 cents a day!*

The typewriter whose conquest of the commercial world is a matter of business history—*yours for 17 cents a day.*

The typewriter that is equipped with scores of such conveniences as "The Balance Shift"—"The Ruling Device"—"The Double Release"—"The Locomotive base"—"The Automatic Spacer"—"The Automatic Tabulator"—"The Disappearing Indicator"—"The Adjustable Paper-fingers"—"The Scientific Condensed Keyboard"—



Yours for 17 Cents a Day

We announced this new sales plan recently, just to feel the pulse of the people. Simply a small cash payment—then 17 cents a day.

That is the plan in a nutshell.

The result has been such a deluge of applications for machines that we are simply astounded.

The demand comes from people of all classes, all ages, all occupations.

The majority of inquiries has come from people of known financial standing who were attracted by the novelty of the proposition. An impressive demonstration of the immense popularity of the Oliver.

A startling confirmation of our belief that the Era of Universal Typewriting is at hand.

A Quarter of a Million People Are Making Money with

The OLIVER Typewriter

The Standard Visible Typewriter

The Oliver Typewriter is a money-maker, *right from the word "go!"* So easy to run that beginners soon get in the "expert" class. *Earn as you learn.* Let the machine pay the *17 cents a day*—and all above that is yours.

Wherever you are, there's work to be done and money to be made by using the Oliver. The business world is calling for Oliver operators. There are not enough to supply the demand. Their salaries are considerably above those of many classes of workers.

"An Oliver Typewriter in Every Home"

That is our battle-cry to-day. We have made the Oliver *supreme in usefulness and absolutely indispensable in business.* Now comes the conquest of the home.

The simplicity and strength of the Oliver fit it for family use. It is becoming an important factor in the home training of young people—an educator as well as a money-maker.

Our new selling plan puts the Oliver on the threshold of every home in America. Will you close the door of your home or office on this remarkable Oliver opportunity?

Write for further details of our easy offer and a free copy of the new Oliver catalog. Address

The Oliver Typewriter Company
911 Huron Road, Cleveland, Ohio

You are Interested in Securing a Crop of Honey during 1910

For beginners there is no hive that will enable you to secure more honey than our Danzenbaker hive.

For the best all-around hive the regular Dovetailed, with supers holding the $4\frac{1}{4}$ sections, can not be beat.

For the expert bee-keeper who wishes to handle and care for the bees with the least work and worry, the divisible hive is well adapted.

You should secure some of our hives early so they will be on hand when needed.

The A. I. Root Company
Syracuse, N. Y.



Established 1885

We carry an up-to-date
... line of ...

Bee-keepers' Supplies

Prices the lowest in the West. Write us for our 50-page catalog, ready to mail you. Free for the asking. . . We can fill your orders promptly and satisfactorily. Our old customers know what we handle; to new ones we can say that we have

THE ROOT COMPANY'S Make of Supplies

hence there is nothing to fear as to quality.

Early-order discounts for the month of February, 2 per cent.

Beeswax taken in exchange for supplies or cash.

John Nebel & Son
Supply Co. High Hill, Montg. Co., Mo.

TAKE YOUR CHOICE

Of the following booklets from the "Ten-cent Library" listed in Root's catalog:

- (1) "Facts About Bees,"
- (2) "The Habits of the Honey-bee,"
- (3) "The Dovetailed Hive."

You send us your name and address, also the name and address of two of your neighbor bee-keepers; also how many colonies each of you have, and we will mail you your choice of the above booklets, *postpaid*. A postal will tell it all.

We keep "Root-Quality" Goods in Michigan. We want you to have our catalog for 1910. It is yours for the asking.

M. H. HUNT & SON
OPPOSITE THE LAKE SHORE DEPOT
LANSING, MICHIGAN

50 Passenger Trains 60 Freight Trains

Boat - Interurban Cars and Steamboats enter and leave

.. ZANESVILLE ..

every day, insuring most prompt receipt and delivery of your orders. My free catalog will give you more facts about

"Peirce Service--Root Quality."

Edmund W. Peirce, Zanesville, O.

The National Bee-keepers' Association. OBJECTS.

1. To promote the interests of bee-keepers.
2. To protect and defend its members in their lawful rights as to keeping bees.
3. To enforce laws against the adulteration of honey.

MEMBERSHIP DUES.

One dollar a year.

OFFICERS AND EXECUTIVE COMMITTEE.

PRESIDENT.—George W. York, Chicago, Ill.

VICE-PRESIDENT.—W. D. Wright, Altamont, N. Y.

SECRETARY.—Louis H. Scholl, New Braunfels, Tex.

TREASURER AND GENERAL MANAGER.—N. E. France, Platteville, Wis.

Are you a member? If not, why not send the annual dues of \$1.00 at once to Treasurer France? Every progressive bee-keeper should be a member of this, the greatest bee-keepers' organization in America.

Root's Goods

for 1900 are better than ever. We carry full line of them.

MR. BEEMAN, take notice! For low freight and quick service our location can not be excelled in the State. Don't delay. Order now. You can be saving your honey crop while the tardy fellow is waiting for his goods to arrive.

Our 1910 Bee Line . . .

is of the best. We are making a specialty of high-grade untested queens from a famous strain of honey-makers, at \$.00 each. Order now, and be sure to get one for our delivery after May 15, 1900. Remember that cheap queens and poor blood do not pay.

Rea Bee & Honey Company
Reynoldsville, Pa.

Bee Supply Savings



Our catalog tells you how to save on bee supplies. Prices will astonish you. Send for it to-day. It's free. Prompt shipments.

Satisfaction guaranteed. Discounts for early orders.

Leahy Mfg. Co.

117 Talmadge St., Higginsville, Mo.
1699 So. 18th St., Omaha, Neb.

also E. T. Flanagan & Sons, Box 2, Bellville, Ill.

YOU OWE IT TO YOURSELF

to get our 1910 proposition before you place your order for shipping-cases.

You can not be sure of shipping your honey without breakage except in the

CRANE CELLULAR CASES

and they cost you less money. We can tell you how much and why.

Let us tell you what those who have used them say, also the wholesale and retail dealers. Write for our proposition at once.

We allow early-order discounts.

J. E. CRANE & SON
MIDDLEBURY, VERMONT

Mr. B. Keeper

Prices are higher this year, yet my prices are the lowest of all. My catalog, now ready, will tell you so. Big stock on hand, with two more carloads coming this month and more to follow next. The very best of sections, hives, foundation, etc., at the lowest living prices. Satisfaction guaranteed. Ten years in the business. Best shipping points with lowest freight rate. Let us hear from you.

H. S. DUBY, ST. ANNE, ILLINOIS

A FLOWER GARDEN FOR 10c

Fifty cents' worth of flower seeds: Giant Larkspur, Snapdragon, Newest Asters, Choice Sweet Peas, Emperor William's Flower. Send us a dime and we will send you the above seeds and Gladioli of new sorts, prepaid.

PEMBROKE SEED CO., PEMBROKE, NEW YORK

HOW TO KEEP BEES

By ANNA BOTSFORD COMSTOCK

THIS is an excellent book for the beginner.

Nothing better. We cordially recommend it to all who are learning bee-keeping by their own effort. Having commenced bee-keeping three times, the talented author is in a position to furnish the right kind of advice. You can not go wrong in ordering this book. It is charmingly written and easily understood. Price \$1.10 postpaid by

THE A. I. ROOT COMPANY, MEDINA, OHIO

Beginner's Outfit No. 3.

There is both pleasure and profit in keeping bees, even in a small way. Most hobbies do not make any profit at all; on the contrary, one is continually out of pocket by them. The work of attending bees is not laborious or dirty, neither do they require constant attendance. On the contrary, they will work for several weeks without attention, and one may work among them without fear of soiling clothing or hands.

As to profits, very few agricultural pursuits come up to it; in fact, it is not uncommon for a beginner to make back the first year all that his outfit cost him.

But that is not all. A man with a few bees gets an insight into the mysteries of insect life which is invaluable to him. Experience of this kind has a high educational value, and many of our ablest educators and scientific men keep bees just for the intellectual pleasure it affords them. No amount of reading will give this knowledge. One must actually keep bees and handle them to acquire it. You will find bee-keeping a delightful outdoor avocation, the essentials of which are easily learned by any intelligent person.

Bees may be kept almost anywhere. The capital is small and the running expenses almost nothing. If you are looking for a hobby or an occupation that is really delightful, try bee-keeping.

IMPORTANT. The demand for bees is so heavy each year that our apiaries, and apiarists as well, are taxed to the utmost during the early shipping season to get the various orders out at the most favorable time. For instance, we should ship to a point in Kentucky several weeks before we would to a point in Michigan so that the delivery of the bees can be made at an opportune time, say in early fruit bloom. Taking the locality to which the bees go into consideration, as well as the conditions in our own yard, and the number of unfavorable days that we will naturally have here unsuitable for shipping, it is important that orders be entered very soon so that we may have them properly tabulated and a schedule arranged for the delivery at the most favorable time for each one.

Each item of the following list has been carefully selected, and we doubt the wisdom of leaving any article out, but the purchaser may do so without altering the prices on the other items:

Outfit No. 3.

A Junior Root smoker	\$.65
A pair of bee-gloves (small, medium, or large)	.50
A bee-veil	.35
One full colony of bees in Danzenbaker hive, complete, with tested Italian queen	13 50

Special Offer: { Delivered at any express office in U. S. East
 of Mississippi River and North of Alabama. **for \$15.00**

We quote the Danzenbaker hive because this is the one we recommend for the production of comb honey. All the above items are strictly first class in every particular. The bees are the best Italian stock on straight worker combs, and we guarantee them to be satisfactory. If the above outfit is not just what you want, write us and we will offer other suggestions.

We call your attention to the following unsolicited letter from a satisfied customer, which shows that our claim for profits in bee-keeping is not at all exaggerated.

OLIVET, MICH., Feb. 1, 1909.

I am a beginner in bee-keeping. I began in May, 1907, with about 17 colonies, and as that was a very bad year I did not have very good luck with them. I did, however, learn something, at last, about handling them. Last summer I did better. I sold nearly \$100 worth of comb honey, and I have 37 good stands in my cellar now, waiting for the spring to begin another summer's work. I love my bees and am anxious for the fray to begin. I am a lone woman, and do most of the work myself. I read GLEANINGS with delight when I can borrow one, but think I will begin taking it for myself. Enclosed please find trial order.

Respectfully,
E. J. Snelgrove.

THE A. I. ROOT CO. { Medina, Ohio.
New York City, 603 Evening Post Bldg.
Philadelphia, Pa., 10 Vine St.
Chicago, Ill., 213-231 Institute Place.
Send your order to the nearest office.

Enclosed find draft for \$15.00, for which please send me Outfit No. 3, as listed above. I understand that you guarantee safe arrival and prepay all charges, if North of Alabama and East of Mississippi River.

Name

Town

County..... State

MAKE A LIVING WITH BEES. . . .

Read
these..
Books

A Year's Work in an Out-
Apiary,
Alexander's Writings on
Practical Bee Culture

Are you getting the best possible results from your bees? What does the season's honey crop mean to you? There is money in bees whether you have a few colonies or several hundred. The bees will do their part every time if you do yours.

Two veteran bee-keepers, E. W. Alexander and G. M. Doolittle, have written of the methods by which they made their bees produce results which might seem incredible to the uninitiated. Mr. Alexander's bee-keeping was extensive, while Mr. Doolittle's is on a much smaller scale, but intensive. Mr. Alexander had as many as eight hundred colonies at a time, while Mr. Doolittle obtained the results he describes from about thirty colonies. Both are practical bee-keepers of wide experience.

In "A Year's Work in an Out-apiary" Mr. Doolittle explains every detail of the work required from the time the bees are taken from their winter quarters until the last drop of nectar is harvested in the fall. It is a detailed account of just what he did to make his bees produce an average of 114½ pounds of honey in a poor season.

Here are some of the Things Mr. Doolittle Talks about:

- | | |
|---|---|
| 114½ lbs. of
Comb
Honey
per Colony | CHAPTER 1. Putting the bees on summer stands. |
| | " 2. An inspection of the brood-frames. |
| | " 3. Bloom-time. |
| | " 4. How to control swarms when running for comb honey. |
| | " 5. A simple plan for making increase. |
| | " 6. How to save unnecessary lifting taking off filled supers. |
| | " 7. Taking off the surplus; what to do with unfinished sections. |
| | " 8. Progress in the supers. |
| | " 9. A simple way to put on escapes without lifting. |
| | " 10 and 11. Taking off honey and storing it in the out-yard. |
| | " 12. Closing words and further suggestions. |

Mr. Alexander was one of the largest, if not the largest, bee-keeper in the United States, and what he has told of his methods must necessarily be of interest to large bee-keepers. He kept bees for over forty years, and produced honey by the carload. His writings are practical, and what he has done others may do if they care to follow his teachings. Contents of the Alexander book:

PART 1.—Bee-keeping as a business. What constitutes a fairly good locality. Amount of honey per colony. Profits in bee-keeping. A few things not to do in bee-keeping. Styles of appliances to adopt.

PART 2.—Taking bees from the cellar in the spring. Spring dwindling. Alexander plan for building up weak colonies. Brood-rearing in the spring. Spring feeding. Making increase v. buying colonies. How to dispose of new swarms and control undesirable increase. Transferring bees.

PART 3.—Honey production. Extracting uncapped honey. Producing comb honey. Comb v. extracted honey.

PART 4.—Disposing of the honey crop. Organizing for better prices.

PART 5.—Queens and queen-rearing. Nuclei for rearing queens. Superseding our old queens. The importance of having queens reared from the best stock. Yellow vs. leather-colored Italians. Rearing queens for early increase. Plurality of queens in one hive.

PART 6.—Wintering.

PART 7.—Bee-diseases.

Either of these Books is sold in combination with GLEANINGS IN BEE CULTURE

GLEANINGS has been the leading authority on bees for almost half a century. No bee-keeper, whether he keeps one colony or a hundred, can afford to be without GLEANINGS. Every number contains something of interest on every feature of bee-keeping, from hints to beginners to quotations of the large honey markets all over the country. The illustrations make the paper very attractive, and add a great deal to its practical value. Mr. Root's Home and Poultry departments are always eagerly read, and of keenest interest to every member of the family. From now until

January 1, 1911, we will offer one copy of Doolittle's Writings or the Alexander Book with every yearly subscription to GLEANINGS, new or renewal. You get BOTH for the subscription rate alone, which is only \$1.00. Enclose the coupon and a dollar bill in an envelope, and get the best bee magazine in the world for a year, and a book which will tell you how to increase your honey crop many fold.

Canadian postage, 30 cts.; foreign postage, 60 cts. per year extra.

THE A. I. ROOT CO., Medina, Ohio.

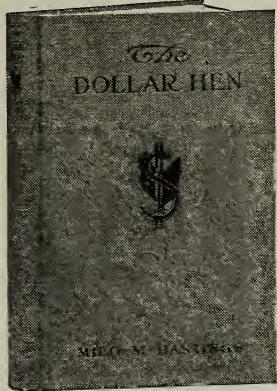
For the enclosed \$1.00 please enter my name for a year's subscription to GLEANINGS IN BEE CULTURE, and send me _____

Name _____

P. O. Address _____

Co. _____ State _____

\$400,000,000 WORTH OF EGGS!



MR. POULTRYMAN.—Uncle Sam says the annual Egg crop is worth \$400,000,000! and that the value of Poultry and Eggs produced last year exceeds \$700,000,000!! Did you get your share of this money? If not, why not?

Milo M. Hastings, until recently the **COMMERCIAL POULTRY EXPERT** FOR THE UNITED STATES GOVERNMENT, has written a poultry Book: "The Dollar Hen." This book is a complete, thorough, and concise work of 222 pages, containing 106,000 words, also several charts, maps, etc. The purpose of this book is to tell the reader—

How to **MAKE** Money Raising Poultry and NOT HOW TO LOSE IT

"The Dollar Hen" is not a boom poultry-book. It tells as much about what NOT TO DO as what TO DO. It thoroughly discusses every phase of the poultry business and tells how money can be made or may be lost. It gives a full account of all methods and systems of poultry-raising as taught by private individuals. Mr. Hastings does not advocate complicated and expensive methods; in fact, he found such to be universal money-losers.

As a Government Expert

As a Government Expert Mr. Hastings investigated all the various private systems, patent feeds, and so-called poultry secrets. He visited the great successful poultry-farming districts of Petaluma, Little Compton, Watertown, the South Shore, and other regions—some wholly unknown to the poultry press—and gathered from all these sources the best ideas and most profitable practices. From his long practical experience on farm poultry-plant, with State Experiment Station work, and Federal service, and with his unprecedented opportunity to get at the actual facts of the poultry industry, Mr. Hastings has laid out a typical money-making poultry-plant, called

The Dollar-Hen Farm

and has described the various necessary adaptations for different localities and conditions.

"The Dollar Hen" Tells About—

The Hen's Ancestors,
Chinese Poultry Culture,
Fertility of Eggs,
The Future of Incubation,
Buying Eggs by Weight,
How Eggs are Marketed,

The Wisdom of the Egyptians
Principles of Incubation,
Moisture and Evaporation,
How Eggs are Spoiled,
Breeding for Egg Production,
A Big Business; Growing Bigger, and over 100 other subjects.

Expenses Cut in Half

Why spend several dollars per hen for housing when Mr. Hastings teaches you the construction of a system of housing that has been eminently successful and costs only thirty cents per hen!

Why pay high prices for theoretically "balanced rations" when a practical food-chemist who has personally investigated the work of a score of experiment stations has found the most profitable poultry rations to be as simple as the corn and alfalfa diet of a Kansas steer!

Why invest money in patent "systems," patent feeds plans, remedies, etc., of little or no value, or capable of only local application, when a Government Expert who has investigated the industry throughout the United States and Canada has proven the worth or worthlessness of these things, and tells you how to apply this knowledge to your particular circumstances and climate!

Why waste money and time experimenting with poultry when for a very small sum you can buy a guide to profitable poultry production! Why not make money at some one else's expense! "The Dollar Hen" TELLS YOU HOW in plain, simple language, and proves every statement made. Remember you are getting facts and figures that cost the United States Government thousands of dollars to secure.

Poultry Press Endorses "The Dollar Hen."

There are no exaggerated get-rich-quick schemes discussed. It is plain common-sense from cover to cover, and is well worth reading by any one that wants to learn the facts about the poultry business.—*Inland Poultry Journal*.

It is the best book for the beginner that has lately appeared, because it deals in straight facts without theorizing. What it says has been worked out in the poultry-yard.—*Miller Purvis, Editor of Poultry*.

"The Dollar Hen" brings out some ideas that are novel and valuable to all poultrymen.—*American Poultry Advocate*.

My opinion is, that "The Dollar Hen" is not only the best book on poultry we have at the present time, but it is worth pretty nearly as much as all the rest together. Perhaps this is extreme, but we have very few books that are strictly up to date, and still fewer that pitch right into the superstitions and humbugs now scattered all through our poultry books and journals.—*A. I. Root, Medina, Ohio*.

THE DOLLAR HEN is a real book, substantially bound—not a paper-bound pamphlet of "System," "Secrets," or "Methods," but a book worth several dollars of any poultryman's money. THE DOLLAR HEN has a vast fund of valuable information that required much time, expense, and effort. And think of it! You can have this authoritative and complete guide to profitable poultry, postpaid, for only \$1.00.

In connection with a year's subscription to GLEANINGS IN BEE CULTURE, we make a special combination price of \$1.50. A two-dollar value for \$1.50. Order to-day.

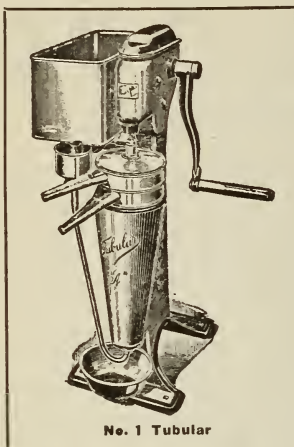
In connection with a year's subscription to GLEANINGS, 30 cents additional is required from orders to Canada, or 60 cents additional for orders from foreign countries.

The A. I. Root Co., Medina, Ohio

GLEANINGS IN BEE CULTURE one year
and a copy of The Dollar Hen, \$1.50.



MILO M. HASTINGS



No. 1 Tubular

**Pure Velvety Cream,
Pure Skim Milk,
Pure Whole Milk.**

**You can have either or
all within a few min-
utes, if you have a . . .**

Tubular Cream-Separator

If you haven't used milk that has been through a Tubular you are not yet acquainted with what is best of milk or cream. Centrifugal force has a purifying influence wholly its own, unlike any thing else, apart from every thing else, and gives a perfection of milk or cream which nothing else can supply.

The Tubular Separator is the best application of centrifugal force to separating cream and milk—double the force of any other cream-separator; a plain, smooth, suspended bowl; bottom feed of milk to bowl, giving a smooth, continuous current from supply-tank to outlets; no complicated contents in the bowl to whip, chop, or partly churn cream or milk. All are valuable and exclusive features in the Tubular.

The having of heavy cream or thinner cream is a matter of adjusting a screw. The having of separated milk and cream, or whole milk, is the setting of discharge tubes.

The running of a small-size Tubular is scarcely more difficult than turning a coffee-mill. The Tubular is a perfect self-oiler, always perfectly lubricated, and never drips or weeps oil.

No. 1 size is ample if you have one or two cows. No. 2 is better if you have three or more cows. Write for Catalog No. 288 for description of the Tubular, and why and how it is mechanically and scientifically superior to the earlier-built types of separators. Ask questions if you choose; we'll be glad to answer.

THE SHARPLES SEPARATOR CO.,

WEST CHESTER, PA.

Toronto, Can.

Chicago, Ill.

Portland, Ore.

Winnipeg, Can.

San Francisco, Cal.

BEESWAX WANTED

WE are always in the market for beeswax, and will pay the best market price. We used last year in the manufacture of **Comb Foundation** over

NINETY TONS

and are likely to need fully as much for this year's trade. Send your wax direct to us, being sure to pack it carefully for safe shipment, and mark it so we can easily tell who sends it. Write to us, at the same time sending a shipping receipt, and stating weight of shipment, both gross and net.

We are paying at this date for pure average beeswax delivered here, 29 cents per pound cash, or 31 cents in trade. On choice yellow wax we pay a premium of one to two cents a pound.

THE A. I. ROOT COMPANY, MEDINA, OHIO

Northwest Farm and Home

**Established
1847**

**Ligh Richmond Freeman
Managing Editor**

Most elegant descriptive magazine and agricultural periodical in America.

Goes in town and country.

Subscription for 1910, \$1.00.

General circulation among three million people west of St. Paul and north of San Francisco.

The highest authority on irrigation. It demands one billion dollars direct appropriation by Congress for irrigation to increase America's population to one billion.

**"Dairy and Live Stock" and "Poultry
and Pet Stock" consolidated with**

Northwest Farm and Home

North Yakima, Wash.

The price of our magazine is 20 cents a copy. It is worth every cent of that, and no sample copy will be sent out except on receipt of the 20 cents. Every issue contains descriptive matter about the resources and scenery and the methods of agriculture in the New Northwest, and is embellished with beautiful half-tone illustrations.



THE CHIEF INSPECTOR OF INDIANA LOOKING FOR FOUL BROOD.

INDIANA'S FOUL-BROOD LAW.

Some Figures Showing the Excellent Results from the First Year's Work; Some Amusing Incidents Connected with a Foul-brood Inspector's Work.

BY WALTER S. POWDER.

Our new law placed the work of inspecting apiaries in the hands of our State Entomologist, Mr. Benjamin W. Douglass, and the work required from his office takes in a wide scope. Mr. Douglass appointed Mr. George S. Demuth, of Peru, Ind., as chief inspector of apiaries, and where required deputies were appointed. Much valuable work has been accomplished; but when we scan the figures which will appear in the annual report we realize that Indiana did not take the work in hand any too soon.

We recently asked Mr. Demuth for some statistics on the first season's work, and he informs us:—"During the season some inspection work was done in each of twenty-two counties. A total of 513 visits were made, and 480 apiaries were visited; 6036 colonies were inspected; 1431 of these were diseased. Of the 6036 colonies inspected, 328 were in box hives and 213 were in frame hives from which combs could not be removed on account of being built crosswise. Some of these were even in 'Pouder's Best;' but I presume the owners' wives had appropriated for her flatirons the foundation which you sent along; at least there was no evidence of any having been used in the frames."

We then asked Mr. Demuth a number of questions, the answers to which, together with the questions, are as follows:

"Do you find hives and combs exposed to robbers in which the bees have perished?"

"Yes. In addition to the 1431 diseased colonies, 495 hives were found from which the bees had died of foul brood and were left exposed to robbers. In many cases robbers were found at work on these combs when the inspection was made, as colonies continue dying during the entire season. In the 495 hives the characteristic scales of American foul brood were discovered. Many other hives of combs were found exposed to robbers, but only those known to contain disease were counted in the 495. The 495 hives were not counted in the 6036 colonies inspected. These hives and combs were promptly burned before leaving the premises."

"Have you found it necessary to destroy any living bees where owners failed to comply with the specifications of the law?"

"Fifty-eight colonies of bees, hives, and combs were burned during the season. No bees were burned unless the owners absolutely refused to treat them."

"Have you met with any difficulties or unpleasant features in enforcing your instructions?"

"A few peculiar features developed from time to time, but they were more of a humorous nature than unpleasant. I recall having wasted a valuable half-hour in trying to convince one man that we had a legal right to inspect his bees, and that each colony

would not hie away to parts unknown, or would not wither under our deadly touch, and shuffle off to the happy hunting-grounds. I was so indiscreet as to intimate that we would inspect the bees any way. At this the man burst into a mighty wrath, and, stretching his 'six-foot-two' to its full height, he remarked, 'I fought three years to save my country, and I shall fight three more to save my bees.' I took this as a signal to begin work, and immediately pried the super from the nearest hive and began removing brood-frames. The soldier was so surprised that he only pouted like a child. On one occasion I had to burn some bees in a certain locality, and a few weeks later I happened to be in the same place, when, to my surprise, I learned that the farmer bee-keepers had heard of the awful man who went about as a roaring lion burning peoples' bees; and so, in order to save their honey and wax, they were actually killing their bees and rendering the honey and wax so the "awful man" wouldn't burn them. This happened in a neighborhood where no inspection work had been done whatever, and the bees were probably healthy. One man, whose bees were badly diseased, refused to treat them, so we went to destroy them. The owner came at us with a big butcher-knife, whisked it about my face, and informed me that if we killed his bees we must first kill him. That looked like a rather large undertaking; so we brought the town marshal to watch the knife



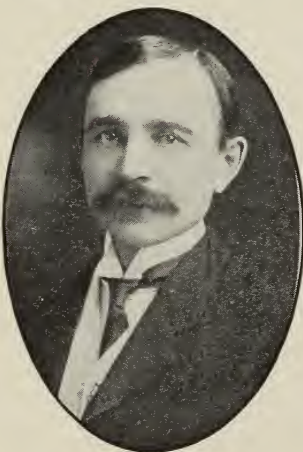
MR. DEMUTH'S HOME IN PERU, INDIANA.
This home was built with one season's profits from the bees.

he has eagerly devoured every thing he could get hold of on the subject of bee culture, and has spent considerable time and money in experimenting. He is quite thorough in microscopic work, and is an expert photographer, which is of much benefit in his present work. He owns and operates three outyards, a total of 200 colonies, all run for comb honey, using an automobile in visiting the different yards. He is the only one whom I have personally known to practice migratory bee-keeping successfully. By moving a carload of bees to the marshy regions for the fall flow he has secured excellent results; but the system had to be discontinued on account of foul-brood appearing in those regions. Since foul brood is to be eliminated, the practice will likely be taken up again.

He spends less time now on three yards than he formerly did on one; and while this has been his poorest season, the time required shows a fair profit. His best season was that of 1908, when he built his beautiful home from the proceeds of his apiaries for that one season.

During the cold months Mr. Demuth is kept busy inspecting nurseries and nursery stock, and much other work emanating from the office of the State Entomologist. The educational work which is being accomplished in favor of the bee industry is bound to have a telling effect. At our State Fair Mr. Douglass exhibited specimens of foul brood in glass cases, showing the disease in its different stages; also a half-starved swarm of bees clustered on dead-ripe grapes, and other interesting exhibits of bees which were in charge of Mr. Demuth. The lectures attracted large crowds.

Mr. Demuth's lectures before institute meetings, with his lantern-slides, are being spoken of as models of perfection. Prior to his appointment as Chief Inspector of Apiaries he had been employed as one of the professors in the city schools of Peru. It was an instance of "the office seeking the man,"



GEO. S. DEMUTH, PERU, IND.
Chief Inspector of Apiaries in Indiana.

while we had our backs turned doing the work. So far as I know that knife is still innocent of human blood." George S. Demuth was born near Peru, Indiana, reared on a farm, and has kept bees since he was a mere boy. Like other bee cranks

and the work accomplished is certainly a credit to the Hoosier State.

Indianapolis, Ind.

[Indiana is certainly to be congratulated on having so efficient an inspector. One who knows his job and how to handle these ignorant bluffers and cut-throats, like Mr. Demuth, should be and probably will be retained in service.—ED.]

BEES IN THE GARRET.

One Colony in a City Averaged 75 Pounds of Comb Honey for Eleven Years, and did Not Cast a Swarm.

BY CHARLES STEWART.

Bee-keeping is classed among rural industries; yet it is not necessary to live in the country or even in the suburbs or in a village to taste the pleasure of the pursuit, for it is a genuine pleasure—it is even more; it is a delightful and seductive charm; and for the city man who retains many of his original illusions and all his love for the simple life of rural industry, keeping bees is the least depressing method of being “stung.” A whole lot of enjoyment (and, incidentally, 50 or more pounds of honey) may be had from a single colony of bees in the most populous residence district of almost any city in that wide belt extending east and west, perhaps, from Montreal, Can., to the Gulf of Mexico. The place to keep the colony is in the garret, and a good time to make the start is during the swarming season.

Several years ago the writer's attention was first called to a colony of bees in the garret. No, they did not disturb the neighbors, for the neighbors did not know they were there. Since that time many others have come under his observation; and with all of them the result has been substantially the same. In no case do they require much care; and the rule is, *they do not swarm!* While the rule is not “iron,” the exceptions are very rare. To the writer's personal knowledge, a colony that has been kept eleven years in a garret never swarmed; and during that time it averaged more than 75 lbs. of section honey annually. This is (for the colony is there yet) in the residence section of a city of about 20,000, the princely home of a retired oil and glass capitalist. The same man has also a colony in the attic of his stable where he keeps a few high-bred driving horses. The colony in the stable is on a shelf, or platform, at a slatted ventilator which affords the bees ingress and egress. It has been there nine years, and never yet has swarmed; and the honey produced has averaged about the same as the colony in the garret a few rods away.

Of the many other colonies of bees kept in garrets, only one instance has come to the writer's knowledge of their having swarmed. You can put a colony in your garret;

and if it has sufficient hive room, the chances are a hundred to one the bees will not disturb your neighbors nor dissipate your expectation of a honey-yield by swarming.

As good a hive should be used as though it were to stand out in the weather; and producing honey in a small way with one or at most only a few colonies, where extracting-outfits would prove impracticable, the hive should be suitable for the production of comb honey. True, shallow extracting-frames might be used instead of sections, and the honey cut out for use as “chunk honey,” but it is not tidy nor neat, and in a short time the “proprietor” of even a single colony will experience a pardonable pride in having his bees produce as nice “section honey” as any to be seen anywhere. No mistake will be made in choosing the Danzenbaker hive. It is the comb-honey hive *par excellence*. Your colony in the garret, with abundance of winter stores, will build up to enormous strength early in the season and have a mighty army of bees to garner the crop of nectar from every source. They will need an abundance of hive room; and the Danzenbaker hive, being both a shallow brood-nest and a ten-frame hive, presents an admirable foundation upon which to tier up supers for surplus honey without fear of top-heaviness. The statement already made, that the average, in confessedly poor localities for honey-gathering, has been about 75 lbs., should not mislead; for in exceptional years the yield may be double, triple, or quadruple, and there should be supers enough on the hive for any contingency.

Toledo, Ohio.

ANNUAL CONVENTION OF THE EASTERN NEW YORK BEE-KEEPERS' ASSOCIATION.

The second annual convention of the above association was held Dec. 8, in the chambers of the Common Council, City Hall, Albany. The President, W. D. Wright, called the meeting to order. At the call of the roll of 53 members, only 20 responded. The minutes of the previous convention, held at Catskill, were read and approved. At the collection of dues, 20 members paid their dollars.

A motion was adopted making all dues payable from Jan. 1 of each year.

The President presented an interesting and entertaining address. The annual election of officers resulted as follows:

President, W. D. Wright, Altamont.

Vice-president, T. D. Mower, Athens.

Second Vice-president, A. L. Fisher, Central Bridge.

Secretary, S. Davenport, Indian Fields.

Treasurer, M. A. Kingman, East Greenbush.

The President, W. D. Wright, and Secretary, S. Davenport, were elected delegates to the annual convention of the New York State Association of Bee-keepers' Societies. The Secretary suggested the propriety of taking a statistical report from members relative to their bee-keeping and its results; but on soliciting the same some discussion developed much opposition, and the subject was laid on the table.

Geo. B. House, Black River, and Irving Kinyon, Camillus, delegates to the State convention, also Alden Hilton, Schenectady, made extended remarks on interesting topics.

The time of the convention was mostly taken up with routine business, as it was to be followed in the afternoon by the convention of the New York State Association of Bee-keepers' Societies.

S. DAVENPORT, Sec'y.



Direct from California

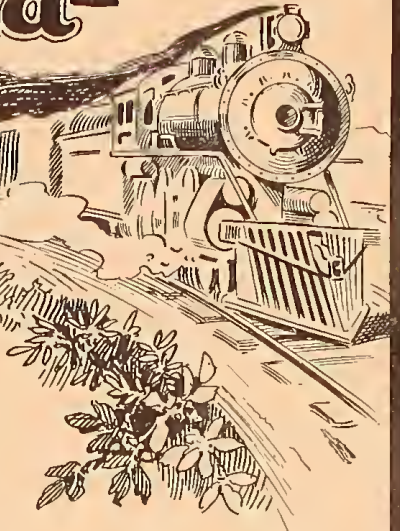
TO THE CITIES EVERYWHERE

WE PAY THE FREIGHT
TO YOUR RAILWAY STATION

WE GUARANTEE
ORDERS RECEIVED FROM 500 TOWNS LAST SEASON.

ANY POUND OF DRIED FRUIT OR
OF CANNED FRUIT WHICH WE
STAND READY TO REFUND
THE MONEY IF UNSATISFACTORY.

REFERENCE
FIRST NATIONAL BANK,
COLTON, CALIFORNIA.



DRIED FRUITS

FAT, JUICY PRUNES, LARGE
SELECT RIPE PEACHES, AND
APRICOTS, MUSCATEL RAISINS.

CANNED FRUITS

"WARE-DA-GRO" BRAND
THE LARGE SELECTED
FRUIT PUT UP IN HEAVY
CANE SUGAR SYRUP.

HONEY FANCY
EXTRACTED
CALIFORNIA HONEY.

NUTS SOFT SHELL
WALNUTS
AND ALMONDS.

Send Your Orders Now

for Spring Supplies

Cars Will Leave Colton

March 1st for Eastern distributing points
and will be shipped from
Colton about April 1st

Our orders for November
and December

in number and quality were larger than all
others received last season.



OUR GUARANTEE

You can use some of each variety in your
shipment, and, if not satisfied, box up the
balance—deliver it to the freight agent—
send us the shipping receipt and a list of
what you have returned, and we will send
you the money you paid for it.

Put up assorted also in 10, 25,
and 50 pound boxes of one kind
—all new crop—first-class fruit.

We Have Shipped Our Fruit

to thousands of towns. We shall be pleased
to send you the names of people
in your town or vicinity who have
bought California products of us.

Write for the Spring Price List
and Colored Posters.

California Fruit Products Co.
Ave. 171 **COLTON, CALIFORNIA.**

ROBBER-TRAPS.

How Constructed; When and How they Can be Used.

BY E. R. ROOT.

We have been using in our yards, for some years back, various forms of robber-traps. Their purpose is to catch the hardened "old sinners"—bees that are professionals in the art of robbing, and which are of but little practical value for the purpose of getting honey honestly from the fields. As we have before stated in these columns, we catch these shiny-backed bees and kill them. While some protest has been raised on the ground that they might be made over into a colony, yet the kind of "old sinners" to which we have referred are useless for *any* purpose. In a queen-rearing yard the sooner they are out of the way the better for all concerned. As long as they are allowed to prey on their honest neighbors they will *continue* to make work in the yard disagreeable by keeping every colony stirred up and more or less cross, despoil baby nuclei, and make trouble generally. But this is not all. They incite other bees to rob. The force of example is very potent among bees as well as human beings.

A short time ago Mr. Holtermann, in his department, facetiously remarked that any man who would use a robber-trap ought to be "trapped" himself—implying, of course, that such a device is a useless contrivance in a well-regulated apiary. As we later pointed out, robber-traps are almost indispensable in a queen-rearing yard. While one does not need to use them continuously, they are required on occasions; for if a few bees once get started to robbing they will day after day pounce on the combs every time a hive is opened, and render life miserable for their owner and for the baby nuclei. Time and time again in our yards we have restored every thing to absolute order and quiet by the use of the trap. It works like magic; and after the rascals are caught, one will be surprised to note how *few* bees can make such an uproar as is evidenced by the number in the trap. Their intrinsic value is practically nothing, even if they were good honest bees. To let them loose would only invite more trouble. The amount of honey that they might gather if they could be "reformed" would be a very insignificant item. But the amount of damage that they can do in interfering with our

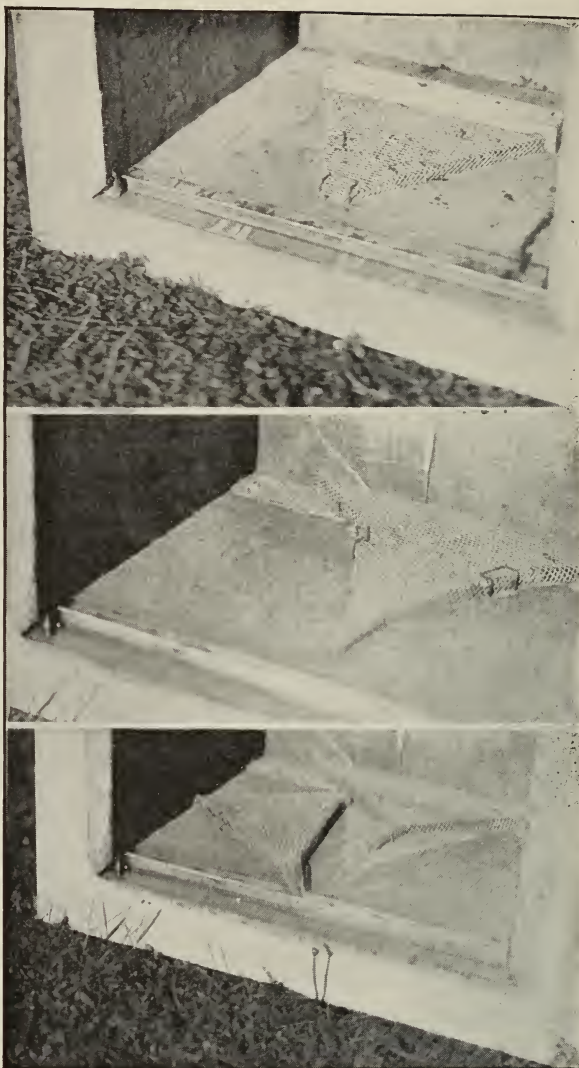


FIG. 1.—Wire-cloth-cone bee-escape on the inside of robber-traps. Note that the large end of the cone communicates with the regular entrance of the hive. Robbers pass in at the entrance up through the cone into the hive and are caught.

queen-rearing operations is no small item. But Mr. Holtermann comes back and says that, if a robber-trap will catch robbers, it will also catch *honest* bees, and why destroy good property? There is no need, Mr. Holtermann, for catching anything but the hardened old sinners—those that we consider hopeless beyond redemption. As explained, we do not run the trap continuously throughout the season—perhaps one or two days in a week, and not even then if no robbers show up. During the entire season at our home yard of 400 colonies and nuclei the total number of robbers that we catch would hardly fill a two-gallon measure; and we venture to say there was not one honest bee out of five hundred in the whole number.

How do we avoid catching honest bees? Easy enough. The traps are put in operation only when the prowling thieves are around. They are constantly on the alert, skilled as they are in the art of stealing and in finding any exposed sweets; that is to say, they are ever following one about, while the honest bees are either in the field or hive.

Let us assume a case. After we have been working in the yard a few days there are a few robbers that accumulate. But we do not let them continue on with their nosing into other people's business till they make work in the yard exceedingly disagreeable, and the colonies that are being worked cross. Before they become very numerous, two or three robber-traps are put into operation; and in an hour absolute peace is restored and not a prowler is in sight.

The value of the trap depends on the fact that it stops a would-be bad case of robbing *before* it has progressed to any extent. A little syrup (and a very little) is put into one or two traps. The robbers, because hunting for sweets, are caught *long before* any honest bees think of looking for it. If Mr. Holtermann will try the traps he will find there is no need for catching honest bees. If he does *he* ought to be "trapped."

CONSTRUCTION OF ROBBER-TRAPS.

Let us now look over one of these traps at the Root apiaries and see how they are constructed. An ordinary hive, such as is used in the yard, two wire screens such as are employed for moving bees, a super-cover, and a wire-cloth-cone bee-escape, make up the complete outfit. (The ordinary Porter spring escapes for this purpose have not been found to be as satisfactory as the wire-cloth cones.) We open up the robber-trap hive, and just over the entrance of it we find a wire-cloth cone tacked up against the inside hive-front. This is made by cutting and folding a piece of wire cloth in the form of a triangle. The large end fits over the en-

trance, while the other end, gradually tapering to a small orifice (about $\frac{3}{8}$ inch square), reaches nearly to the top of the hive, or within an inch of the rabbet on which the frame-rest; it is then secured by double-pointed tacks as shown at the top of Fig. 1. As an additional precaution we find it desirable to have a smaller wire cone of the same construction under the larger one. Where there is only one cone the bees are liable to go back out through the entrance. Other forms of cones are shown in the two lower views of Fig. 1.

One of these traps is placed at a convenient location in the yard, when one of the wire screens for moving bees is laid on top. With a brush we smear a little diluted honey (honey is better than syrup) over the wire cloth at one end—the back one. This film of honey is spread over an area of about two inches wide by the width of the screen. Another screen is placed on top of this, and over the whole is placed a super cover as shown in Fig. 2. Notice that this super cover is set back about two inches, leaving a portion of the wire cloth—the part smeared with honey—exposed where the bees can get a *smell* of it, but not touch it, because the upper screen keeps them from it. Now, a robber-bee, if a hardened "old sinner" or a professional, when it smells honey in this way will immediately begin to "investigate." It will hover around the wire cloth (not covered by the super cover) for a minute or so, and then, like a duck to water, it will make a dart for the entrance. There are no guards there to stop it; it rushes in pellmell, crawls up through the two wire-cloth cones shown in the previous illustration, and out through the apex, when it is a prisoner. It may take a sip of the honey, and when it gets its fill it will go toward the light at the point where the super-cover is slid backward. The chances are only one in a thousand that it will get back through the wire-cloth cones

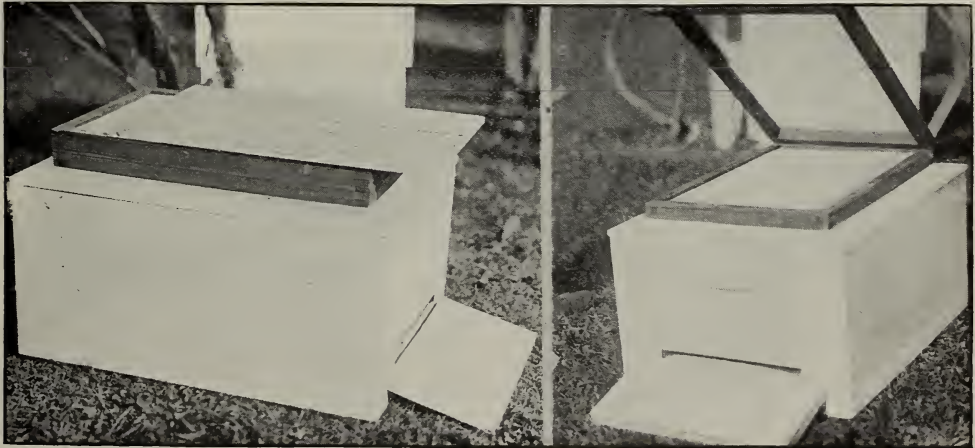


FIG. 2.—Outside detail of the robber-trap. A double screen is used, and honey is painted on the inner screen. Robbers are attracted by the odor of the honey. As they can not reach it from the outer screen they enter the hive and are trapped.

as mentioned, and it soon worries itself to death. Thus the trap works after it catches all the criminally inclined bees. The small amount of diluted honey on the inner wire cloth is used up, and automatically the robber-trap goes out of commission. The old sinners are all caught; and as there is no more honey to attract honest bees, Mr. Holtermann will see that none are caught.

In this way the few prowling robbers that may accumulate in two or three days are caught and automatically disposed of. They either starve or worry themselves to death.

Some years ago, when Mr. Wardell worked for us, it happened that one of his men left the door of the honey house open. That was in the days before we had robber-traps, and when robbers would be prowling about during the entire season. On this occasion the robbers rushed in pellmell. When the robbing was at its height Mr. Wardell came into the yard, and what did he do? He shut the door, then shortly after he went in and killed the whole mass of bees clustered on the screen. In explanation of his action he said we could not afford to have those bees go back to their hives and bring on an onslaught of hundreds and perhaps thousands of other bees. He thought it more economical for the Root Co to kill the first lot rather than to let them loose.

In pursuance of the same principle we later on devised robber-traps. They were first used by Mr. Pritchard at our north yard, and, later, put into commission at the home yard by Mr. Bain. They have been doing splendid service at both apiaries; and that their use is not wasteful of bees is shown by the fact that two gallons of bees will comprise all the robbers trapped in a whole season in an apiary of about 400 colonies and nuclei.

The question may arise right here, "Is the robber-trap of any use to the honey-producer?" Certainly not to the same extent that it is useful in a queen-rearing yard; but during a period of extracting, there are times when it appears to us it might be used to good advantage, especially if some careless employee should happen to leave the door of the honey-house open or allow a colony to be robbed to death.

As we have before pointed out, if robbers can be caught at the very start they will be found to be mainly from one hive, and a little later from two or three. If they get well agoing they will attract other bees by their uproar; but if robber-bees be floured, and

followed back to their hives, it will be seen that the great bulk of them go to only two or three hives. A yard man has to be exceedingly careless to allow robbing to get started throughout the entire yard.

THE BEE-LOUSE.

A Pest Found in the South of Continental Europe and other Parts of the Orient.

BY MANUEL ARRUDA PONTES.

Dear Sir:—Enclosed you will find a package with 30 insects in a small box, and 3 bees in a small bottle, showing how these insects attack the poor bees. I don't know the name of this pest

Fenaes d'Luz, Azores.

[We will explain that we received this bottle of bees some time ago. On examination we found that these vermin are what is known as the bee louse (*Braula cæca*). The

bees sent in alcohol could not be photographed, of course; but we attached one of the insects to the thorax of an ordinary Italian bee, as nearly as possible in the position of those fastened to the bees in the bottle. It is interesting to note, in this connection, that the long fine hairs on the thorax of the bee, which do not show, even in the enlarged photograph, prevented us from getting the *Braula* down close to the thorax. Of course, if the insect had been alive it could have "burrowed"



The bee-louse (*Braula cæca*) about to burrow into the fine hairs on the thorax of a bee, and suck the vitality—about four times actual size.

its way down through this mass of fine hair. We wish that all of our readers could see the original photograph, for, being enlarged, a mass of fine hair is shown all over the bee that is not visible on the bee itself except with the aid of a strong glass.

Prof. A. J. Cook, in "The Bee-keeper's Guide," describes this bee-louse as a blind, spider-like parasite, which, considering the size of the bee on which it lives and from which it sucks its nourishment, is enormously large. He states that two or three, and sometimes as many as ten, are found on a single bee; but on the bees sent to us there was only one insect, and in each case it was clinging to the back of the thorax, about in the middle, as shown.

The bee-louse has done little damage, according to Prof. Cook, except in the south of continental Europe, Cyprus, and other parts of the Orient. Our correspondent lives on an island in the North Atlantic, west of Spain.

Frank Benton, in a letter to Prof. Cook, as given on page 425 of "The Bee-keeper's Guide," says that the "*Braula*, or bee-louse, is no serious pest if the bees are properly cared for; although in old immovable-comb hives, where the combs are very black and thickened, and in case the queens are old, or where, through some extraneous cause, the colonies have become weak, these lice may be found on queens and workers alike. Mr. Benton thinks that, with the attention given bees in America, the *Braula* would never become a serious pest, even if introduced here.—ED.]

A STRUGGLE WITH EUROPEAN FOUL BROOD.

The Removal of the Queen and the Introduction of a New Italian Queen Effected a Cure; Goldens Preferred to Three-banded; the Alexander Method Followed.

BY EDGAR WILLIAMS.

Continued from Feb. 1st issue.

Arriving upon the scene I found smoke pouring up from the floor and about the windows; but there was no fire in sight. We rushed from the attic, then to the kitchen, when, behold, early that morning I had put the honey that I had extracted into a large kettle and set it on the kitchen stove to boil for a few hours in order that I might feed it back to the bees. Well, this honey had gotten the swarming fever. It was trying its best to swarm out of the kettle and cluster on the stove, while the smoke was making desperate efforts to pass through a small register in the ceiling up into the attic. The honey was taken off the stove, and the windows and doors opened to let out the smoke. But no sooner was this done than clouds of bees hovered around the outside, so that the doors and windows had to be shut again. The bees smelled the honey, so I left mother to suffocate with the smoke while I returned to the wax.

A few minutes had been spent with the wax when I received word that the bees were swarming. They had decided not to stay on those empty frames. Fortunately all my queens were clipped, and the bees were never returned. The day was a warm one; and by this time I was getting tired and somewhat nervous. I felt as though bees, wax, and honey were things I would rather not see during the rest of my life. Nevertheless, I wanted to finish the job that day and be through with it; so the rest of the combs were put in the kettle, allowed to steep awhile, and then taken out and buried in a manure heap. I intended to press the wax from the combs; but bees were flying around some, and I was afraid they would get some of the honey. "Haste makes waste," and as a result I secured about 10 lbs. of wax from 300 combs. The slumgum might have been saved and the wax secured at another

melting; but just then it looked better to me in the manure heap. The frames were carried from the attic and dipped in the kettle of boiling water. That done, it was quitting time. I retired early that night very tired, almost sick, and mother was sick.

In the morning I was kept busy most of the time taking care of the swarms. Three-fourths of those thirty colonies were determined they would not stay on those empty frames. They would swarm out, return, and in a few minutes be in the air again. It had been nearly three days since I had shaken them. No honey was being gathered, and I noticed that bees were dropping from the cluster on to the bottom-boards. I began feeding back the honey, medicated with carbolic acid.

The next day being Sunday, I went to church. I returned to find that five or six swarms had come out and returned, nearly all the bees going into two or more of the hives. One swarm had come out so often I had caged the queen. The queen died, and the swarm came out without any queen. Entirely disgusted with the bees, the next morning I shook them on two combs. Now, these combs were perfectly free from disease, as they had been hanging in the top of the woodshed by wires for over a year. These were combs the bees had died on during the severe winter of 1903. The bees had shown no disease whatever the fall of that winter. Combs were clean, and free from honey. This was about six days after the bees had been shaken the first time. The combs that the bees had built since I fed them were melted, and this stopped the swarming fever. A few days afterward I noticed in front of one hive a drop of rotten matter, like that in the combs. Where it came from I can not say unless from the bees. Did this matter, as large as two peas, contain disease-germs? In a few more days I looked at the brood and found six diseased cells in four colonies. As the honey-flow came on at this time, the diseased cells all disappeared, and the bees built up rapidly; but during the drouth between clover and buckwheat the disease appeared again. Over half of the colonies showed disease. I gave up all hopes of getting rid of the disease by shaking.

I looked over my back numbers of GLEANINGS, and read in two instances of what was supposed to be pickled brood being cured by Italianizing. Like a drowning man grasping at the last straw, I immediately ordered fifteen Italian queens. The buckwheat flow came on, and the colonies all improved except six, which remained rotten with the disease, all through the fall flow, and had to be united when fall came. Two of these I sulphured. The following spring told the story. The fifteen colonies headed by Italian queens remained healthy, showing only a few diseased cells. The other colonies, scattered here and there among the Italians, were nearly all badly affected with the disease the same as the previous spring. This settled the question with me. I Italianized my bees,

and have had little trouble since, except with mismated queens.

There is quite a number of hybrid bees around me, and I find a mismated queen's bees, although raised from yellow stock, to have disease just as badly as the blacks. I managed to get rid of my mismated queens in the spring by uniting weak colonies with them, of course killing first the hybrid queen. I find the goldens better than the three banders. The latter show the disease somewhat. An occasional colony is to be found that will have it seriously enough so it will not store any surplus; but it is a rare thing to find a colony of goldens that has disease very badly. Some of them will show a few cells in a dearth of honey, but nothing serious. I find them just as hardy as the other. I have the Doolittle and the Alley strain.

I mentioned the fact that I sulphured two colonies. Well, I took those combs and hived my Italian swarms on them that summer, and they cleaned them up so that they remained healthy. I also took an Italian colony and shook it on to the brood of a diseased colony. About a third of the brood was dead with disease. That was during a dearth of honey, and in two weeks nearly all this brood was healthy. I believe the Italians are better housekeepers than the others. They clean the disease out as soon as a cell shows, and do not give it an opportunity to spread; while the hybrids and blacks will let it lie and rot, thereby infecting the adjoining cells.

Where one has the real yellow goldens the queens will sometimes mate with hybrid drones that are quite yellow, thus producing quite a yellow bee, having some black blood in it, and subject to disease. Mr. Lamson, a neighbor bee-keeper whose bees probably took the disease from mine, Italianized with the goldens, and his apiary is now nearly free from disease. Others have Italianized here the past summer. Mr. Phillips, of Washington, D. C., visited my apiary twice. He pronounced the disease the regular European foul brood.

I bought a Carniolan queen, partly to test them with the disease. They also remained perfectly healthy. I change combs from one hive to another, no matter if they do show an occasional cell of disease, and feed any honey I want to. In fact, I manage the bees as if no disease existed. When I find a case of disease with considerable diseased brood I kill the queen, keep the queen cells cut out, and in ten days give to it a ripe queen-cell raised from one of my best golden breeders. This is only a modification of the Alexander plan. I do not wait quite as long, and am very particular to see that the queen is mated all right. If she is not, I expect to find another case of disease that fall or the following spring. My theory is this: The bees will clean out the diseased brood, and this will put a check on the disease for several weeks; and by this time brood from the young queen is hatching, and these bees, if the queen is purely mated, will free the combs from disease if it does begin again.

This spring I began the season with eighty colonies. Three of them were diseased, and had to be treated. Two were mismated queens, and one was a three-bander. Several others showed a few cells, but nothing serious. I did not do any thing with these except that I kept a record of the queens so that I would not be using them as breeders. I am also very careful about letting any thing but pure drones fly. However, most of mine are pure. I took 2000 lbs. of white comb and 1000 of extracted, and from the fall flow 2000 lbs. of comb and 1000 of extracted, or a total of 6000 lbs., and increased the 80 to 160 colonies. Some of the surrounding bee-men have done better than this, as we have had a good season. I now keep the bees in two yards and winter in the cellar. With the disease under control, and the wintering problem solved, I feel as if I were on the road to success, thanks to bee editors and bee-men who are willing to give to beginners their experience.

Pierpont, Ohio.

ABSORBENT CUSHIONS VS. SEALED COVERS.

No Damp Cushions Found in Fifteen Years.

BY A. E. JANSEN.

I can not imagine why any one should be troubled with dampness when using absorbent cushions. I have kept bees for fifteen years, always wintered out of doors, never with sealed covers, and have never had a damp cushion unless the water came through the roof, and have never lost more than one or two out of fifty or sixty hives, with one exception, and that was in the winter of 1903, when 95 per cent of all the bees in this county, not in cellars, died. I lost 10 out of 50 hives. In referring to my diary I find the bees did not have a fly from November 20 till Feb. 12. Sealed covers may be just as good; but why make a change when results can hardly be better? I use double-walled chaff hives of standard make, on stands made of 2x4 wood placed on the ground. The entrance is contracted to $\frac{1}{4}$ or $\frac{3}{8}$ inch; two sticks and a thin board are placed on the frames, partly covering them; a tray five inches deep is used to hold the cushion, which is packed with oat chaff so full that the telescope cover crowds it hard down on the frames, leaving no space between the cushion and the cover. The roof is thin, covered with tarred paper folded around the corners, and secured by a tin cap at each corner and at the sides. Our winters are very trying on hive covers. They must be absolutely water-proof to stand the soaking they get during long winter rains when covered with snow.

FALL UNITING.

U. S. Donis, p. 745, had trouble with uniting bees. For fall work, select a day late in November, when it is too cold for bees to fly, and when they are likely to be confined

to the hives for two or three days. Separate the frames to be moved in pairs beforehand, and set by the side of the hive where they are to go, so they can be handled quickly. The queen in the colony to which the united bees are to be added must be previously removed. If more than one queen is allowed in the hive, and the weather is warm enough for the cluster to break up, there will sometimes be trouble. A strong queenless colony can be united with a two-frame nucleus with a queen, and I have never had a failure. *Be sure the day is quite frosty.* The chill they get will not hurt them, but will cause them to cluster closer and unite quicker.

New Paltz, N. Y.

[We observe that you are using standard double-walled chaff hives and that the cushions are filled so full of oat chaff that the cover crowds it down hard on the frames, "leaving no space between the cushion and the cover." Practically all of those who report in favor of absorbing cushions, without a sealed cover between the cushions and the frames, have emphasized the *great importance* of leaving an air space between the cushion or packing material and the cover, so as to let the absorbents dry out. Assuming that moisture passes up through absorbing cushions, we are unable to understand how that moisture can escape when the cover comes in contact with the cushion, and is further protected by a tarred-felt cap over the whole. This moisture is bound to accumulate, and it seems very remarkable to us that your cushions should not be very damp before spring.—ED.]

ABSORBENT CUSHIONS VS. SEALED COVERS.

Sealed Covers Not Entirely Sealed; Wheat Chaff Better than Oat.

BY W. H. KIRBY.

It is about twenty-five years since I started keeping bees, and from the start I adopted the system of wintering that I still follow—that of packing on summer stands in small open sheds, as per bottom illustration on p. 468 of the 1908 edition of the A B C and X Y Z which shows one of my sheds and my whole plan of packing with leaves, etc. With a seven-inch-deep telescopic cover, and under covers on top of brood-frames, a chaff box, the length and width of the hive, with a burlap bottom, is placed. These chaff boxes are four inches deep, and filled full of wheat chaff. No other kind is as good for the purpose. It remains open, and does not pack down close like oat chaff when a little damp. With the hives packed between and at the back with maple leaves, solid to the tops, the tops and fronts of the hives being without packing, they are exposed to the weather, and in low temperatures the moisture is

condensed on them, and inside the front end ice will form. This does no harm to the colony, as it melts and runs out of the entrances in mild spells of weather. The covers, having no ventilation, retain the heat of the colony, and the small amount of moisture that rises up through the chaff is attracted to the under side of the top of the cover, and a small portion of moisture settles on the top of the chaff. I have never yet seen any ice under the cover or on top of the chaff—only a mere dampness under the cover; and it was very seldom the top or only a part of the top of the chaff was wet much below a quarter of an inch.

In the spring, when taking off these chaff boxes I have found grains of wheat, that were left in the chaff, sprouted, and a growth of 4 inches made, thus showing that there was considerable heat in the chaff to cause this amount of germination.

One fall a number of years ago I had not enough chaff to go over all, there being some eight or ten hives that I put fine hard-wood sawdust on instead of chaff. This was practically the same as sealed covers. Every one of these colonies was injured, and most of them became extinct in the spring. They were attacked with dysentery, and outside combs were badly molded. This convinced me that fine sawdust is a failure for absorbents, and I have never used it since.

I think that, if those who winter with cushions or chaff boxes on sealed covers were to examine closely, they would find some openings around near covers that allow upper ventilation and let the most of the moisture escape. Two years ago this month I bought a hive of bees from a neighbor who brought them in from the country. It had a single-board cover nailed on with a little crevice near one top corner. They had been out beside a strawstack without any protection. We brought them home one night when the mercury was a little below zero, and placed them in leaves. They wintered perfectly, notwithstanding this late cold disturbance. This experiment makes me think there must be some openings in these sealed covers to let off vapor.

As long as I keep bees I must have a deep telescopic cover, and wheat chaff and maple leaves for wintering. The last two or three winters I have tested some double-walled hives packed with leaves, and find them all right.

Oshawa, Ont., Can.

NOT IN FAVOR OF HOLDING THE NATIONAL AT ANY FIXED PLACE YEAR AFTER YEAR.

BY J. W. ROUSE,

President of the Missouri Bee-keepers' Association.

The next best thing to attending a convention is getting a report of the sessions. When one attends the meetings he talks with many other bee-keepers and gets ideas that, of course, are not given in the reports. Then,

besides, there is the pleasure of meeting old acquaintances and making new ones.

I have the report before me of the Sioux City, Iowa, meeting; and among a great many other good things I notice, first, what President Hilton said when it was proposed to locate the meetings at some central place; also what Mr. Dadant said endorsing the president's views. I wish to voice my own sentiment in this matter. Mr. Hilton and Mr. Dadant thought that, to locate the meetings in one place, would deprive many of going on account of the distance to travel. Although it is very desirable to have as many as possible of those present that attend almost every year, many new ones are needed, so that there may be an exchange of views, methods, etc. Now, it is my opinion that, if all the meetings were held at one point, the death-knell of the Association would be sounded and most of the bee-keepers in the United States would lose interest in both the meetings and in the Association.

The by-laws of the Missouri State Beekeepers' Association forbid holding a meeting in the same place twice in succession. Violating the by-laws has been suggested more than once; but I have always opposed doing so. While we have had meetings in some places that were unsolicited by any of the local bee-keepers, in almost every instance where we did this these local bee-keepers did not attend well.

Our best meetings have been held where the local bee-keepers were interested enough to give a pressing invitation and to attend all the sessions. We always have a rousing convention on such occasions. I am opposed to going anywhere without an invitation unless there is a special reason for doing so. There are many bee-keepers in my own county; but very few take any interest in attending a convention, and for this reason I would do my best against locating our State meeting at this place permanently. I believe in passing the appointments around.

Mexico, Mo.

ARTIFICIAL SUBSTITUTES FOR POLLEN.

Can such Substitutes be Fed Inside the Hive During a Time when it is too Cold for Bees to Fly?

BY F. DUNDAS TODD.

If I am to judge from the reports that appeared in the various bee journals, the outstanding feature of the spring of 1909, so far as it concerned bee-keepers, was the marked dearth of pollen. I happened to be specially interested in the matter, and so noted carefully the various communications, being rather surprised to see that, over the whole continent, the one complaint was made. Some peculiarity of the seasonal conditions had in most localities prevented the development of the necessary fructifying material in the plants; but on Vancouver Island our situation was even more exasperating, for all

around us was a wealth of pollen in the willows; but the weather remained so persistently cool that the bees could not fly for weeks. The first loads were carried in Feb. 22, but from that date until April 3 there was scarcely a day warm enough for the bees to fly.

In my own case the situation was a highly critical one. In September I had fed the bees until every hive contained at least 25 pounds of actual weight in stores. Colonies have been known to go through the winter here on 12 pounds; so I felt every thing was safe and sound. After a zero wave early in January I was astounded to find one-third of the colonies dead of starvation, while the others were on the verge. Now, pollen had been carried in freely all the fall; but in the dead hives there was not a scrap, and mighty little in the others. Candy was at once given above the frames; but what to do in the matter of giving a substitute for pollen was the crucial problem. As a matter of fact I did nothing, for the very good reason I did not know what to do.

The plan of giving flour out of doors I was familiar with theoretically; but since the temperature was too cold for the bees to fly this method was entirely unavailable. So all I could do was to hope for the best, and watch one colony after another gradually fade away of what is generally called "spring dwindling," but which one writer recently labeled "pollen-dearth." When the weather did get warm enough for the bees to fly I found myself owner of only one-third the number of colonies that had been put away for the winter, all weak ones at that.

Naturally there arises the problem, "Is there a practicable method of giving a substitute for pollen in the hives?" All through February and March I searched bee literature in vain for light on this subject, but it was not until fall that I got track of any thing that looked feasible. When the season's work was over I decided to read carefully every book in my possession, just to see that I had not missed some useful hint that was not considered by the authors to be of sufficient importance to be indexed, and soon I stumbled over one sentence that was suggestive but not at all explicit.

"The Book of Bee-keeping" is a Chicago reprint from plates of what is apparently an edition originally published in England. At the end of a paragraph on spring feeding I found this sentence: "Flour candy can be given with advantage at this season of the year;" not a word anywhere as to how it should be made, whether the flour should be added at the beginning of the cooking, the middle, or the end. So the only interpretation possible is this: Artificial pollen in the form of flour can be given provided it is mixed in the syrup of which the candy is made.

The search had now become interesting, so all American bee books were gone through page by page, and at last I was rewarded by finding a few sentences on the subject in Mrs. Comstock's "How to Keep Bees." On

page 142 she says, "The unbolted rye flour, or even oatmeal, or whole-wheat flour, may be used by the bees as a substitute with perfect success. *The meal may be mixed with the candy if it is desirable.*" Now, this is explicit; but I should much like it if some details as to methods of cooking had been included.

"A Modern Bee-farm," by Simmins, is a book I like to read in the winter time to wrestle with his startling ideas and devices, trying to dig the essentials out of his rather involved language. Recently I found he also has something to say on the flour-candy proposition—just four words, and then he leaves it in peace. Let me quote the whole paragraph, beginning on page 189 of the 1904 edition:

The act of breeding, which recommences, in normal colonies, about mid-winter at the center of the cluster, is not in itself a disturbing influence, for as yet its extent is never developed beyond the means at hand for its moderate continuance. But when the owner begins unduly to feed candy, and meal added thereto, then the elements of additional unnecessary excitement are immediately apparent in a large death-rate caused by the premature flight of the workers in search of large quantities of water. The cluster expands unnaturally, and thereafter a serious drain is made upon the vitality of the bees in keeping up a higher temperature generally.

There the proposition rests, so far as I am concerned, for I am unable to find any more references in the bee literature at my disposal. But I am intensely interested in this method of giving the bees a substitute for pollen, if it is practicable, for the indications are that this part of the world may have a repetition of the seasonal conditions of last spring. This is written exactly one year from the day when the abnormal zero wave struck us; but there are no signs of its being repeated. Instead we are having steady cool weather, the thermometer hanging around the freezing-point, and have had since the end of November. My bees are wintering on about 16 pounds of honey-dew and 11 pounds of syrup, so the prospect is not altogether cheerful, seeing that they have not had a flight for over a month at the date of writing, and may be confined three weeks more at least. In most winters here I am assured there are many flight days each month, but this one is different.

Victoria, B. C., January 4, 1910.

[It is unfortunate for you that you did not have at your command the back volumes of this journal, particularly for the years from 1877 up to 1884 and 1885. During that time there was considerable discussion on the subject of giving bees what was then called "flour candy." This is made by mixing one part of rye meal with three parts of white sugar, and wetting it down with a little water. It is then placed over a slow fire and cooked until it is ready to "sugar off." This point can be determined by dipping the finger in cool water, then into the kettle of candy, and immediately back into the water. When the film of syrup breaks like eggshells from the end of the finger the candy is just right.

It is now taken off the stove; and as soon

as it begins to harden on the sides of the kettle the mixture is given a good stirring, the stirring being kept up until the candy is so thick that it can just be poured. Greased tin pans should be in readiness, when the contents of the kettle are poured into the pans and allowed to cool. Cakes of this candy are laid on the brood-frames in the spring, or about the time when brood-rearing will permit. Such candy will supply the bees with syrup as well as a farinaceous diet, so they will rear brood.

The question is raised right here, "Why is there so little said about this kind of candy now? Why should not full directions be incorporated in our text-books of to day?" In the first place, a flour candy, such as is described, is very difficult to make. Even a confectioner has to try several batches before succeeding. In the second place, the meal or flour in the candy is quite likely to stimulate brood-rearing *out of season*; and brood out of season that chills and dies by subsequent cold weather puts a severe drain on the colony, if it does not kill it outright. For that reason it seemed best generally speaking, to let nature handle the problem of a farinaceous diet for the bees. Ordinarily, brood-rearing should not commence much before natural pollen can be gathered. There is only an occasional season like that of 1909, when bees really suffer from a want of nitrogenous food. It is during such seasons that a meal or flour candy in the hive would be worth every thing to the bee-keeper; but even then it would be far better to place dry rye meal on trays outdoors and let the bees themselves gather it and carry it to their hives. It is much safer for the beginner to furnish rye meal in this way than to give it in the hives. The bees can not, of course, gather this rye meal before they can use it to advantage, and right here is the reason why we recommend meal outdoors instead of meal candy in the hive. If, on the other hand, the meal be given in the hive they are almost sure to begin brood-rearing whether conditions are suitable or not outside. For that reason we dropped all reference to flour candy from our A B C of Bee Culture, because we found that beginners were inclined to *overdo it*; and some, strangely, would give it during midwinter just when it would cause dysentery. There is no doubt that flour candy could have been given in many yards last spring to very good advantage. The weather happened to be warm enough for bees to rear brood, but too inclement for them to fly very much; and when they could fly, there was no natural pollen. If meal had been given in the hive with the candy, there is no doubt that a large amount of brood would have been saved last spring. As it was, dead brood from all over the country was sent to this office, the senders inquiring whether the brood died from disease. In almost every case a diagnosis showed that the brood probably died from a want of the nitrogenous element in their food. After natural pollen was supplied brood ceased dying.—ED.]

HONEY FOR COOKING.

An Experiment in Making Doughnuts with Different Amounts of Honey and Sugar.

BY EMMA M. WILSON.

After reading what was said about honey doughnuts, p 34, Jan. 1, I concluded it might be a good plan to try to see what could be done. I made three different batches, and am sending you samples of each. Batch No. 1 was made after this recipe: One cup hot mashed potato; 2 tablespoonfuls of shortening; 1 egg; $\frac{1}{2}$ cup honey; $\frac{1}{2}$ cup sugar; 2 teaspoonfuls baking powder; 1 saltspoon of salt; $\frac{1}{2}$ cup sweet milk; a little nutmeg.

Make a cream of potato, shortening, honey, sugar, and beaten yolk of an egg; then add the milk, nutmeg, and salt; lastly, add the flour, in which the baking powder has been sifted, and the white of the egg beaten stiff.

It is hard to tell exactly how much flour was used; but don't mix it very stiff at first; then try frying a small piece of dough; and if not enough flour, add a little more until they are just right.

Batch No. 2 was made exactly like No. 1, with the exception that one cup of honey was used and no sugar.

Batch No. 3 was the same as No. 1, with this difference: One cup each of honey and sugar was used instead of $\frac{1}{2}$ of each, and two eggs instead of one.

Now, when I came to fry them I found this difficulty. I did not dare to keep the lard nearly as hot as when frying doughnuts without honey. They browned very quickly, and would get too brown before they were cooked through if the lard was kept very hot. So I rolled them out thinner than usual, which helped. None of them were more than $\frac{1}{2}$ inch thick before frying, and most of them less.

Now as to how these three different batches were liked at our home.

The first batch, we all agreed, were good; but Dr. Miller and myself thought they might be improved by being just a little sweeter. Mrs. Miller thought not. She has not quite as sweet a tooth as we have.

Dr. Miller wanted some made entirely of honey, hence the second batch.

Mrs. Miller and I do not like them as well as batch No. 1, and Dr. Miller thinks them better. Perhaps there may be some prejudice in the case, because they are made of honey.

Batch No. 3 — too sweet for Mrs. Miller. Dr. Miller and I think they are pretty good.

As to the keeping qualities of these doughnuts, I can say nothing as yet, as they were baked only yesterday, Jan. 17. I should expect those made with all honey to keep best.

Now, Mr. Editor, I am really very sorry for your digestion if you have to sample all the doughnuts that are launched upon you; but please remember that you invited the catastrophe.

Marango, Ill.

[Our own judgment in regard to these doughnuts is practically the same as yours. No. 1 seems to have the best flavor. No. 2, which is all honey, is much more moist, but the flavor of honey is a little too pronounced, although some might like it for that very reason. No. 3, having a large amount of honey and sugar both, is too rich; and, besides, the doughnut is comparatively dry and hard. We have been making some experiments here, and it appears that a moderate amount of honey and no sugar makes a softer cake, and gives a flavor that is pleasing.

We wish to suggest that you put away a few of each kind and keep them for a month, and then test them for their softness and moisture. We should like it if you could report to us again after, say, sixty or ninety days.

Apparently an excess of sugar and honey makes the cake too dry and hard after it begins to age. Honey used alone for sweetening surely makes a softer cake. Some of the very best doughnuts we have eaten were very soft but only very mildly sweet. We have not much of a "sweet tooth," and perhaps this is why we like the smaller amount of sweetening.

The honey flavor in the doughnuts seems to be that of some fall honey, and we should like to inquire whether you have ever used a mild honey like clover in making doughnuts. Alfalfa honey is fine for cooking, for it does not have a strong flavor, and the suggestion of mint or cinnamon is quite pleasing.—Ed.]

DO BEES FLY IN A STRAIGHT LINE AFTER NECTAR? ARE THEY ATTRACTED BY SCENT OR SIGHT?

Golden Italians Not Hardy.

BY RALEIGH THOMPSON.

I have made some close observations in the last two years. My apiary is in a valley half a mile wide, with hills all around except on the west, where the unbroken country extends for miles. I have traced my bees in this direction four miles. I know they were my bees for they were goldens, and the first that were brought to this part of the State. I will say right here, however, that I did not keep the goldens long, as they were not hardy, and were too much inclined to rob. There is no strain of bees that goes ahead of the leather-colored Italians.

There is a very narrow valley running east for about two miles. My apiary is south of this about 300 yards, and is situated at the foot of a hill with a narrow opening into the valley on the north. Now my bees go north through this opening, then turn east and follow this valley along the south side and the sumac on the hills at the upper end—that is, at the east end. The valley is very irregular in outline, and I have watched my bees follow this route for hours. The hills are covered with timber.

Like many others I thought bees found nectar by sight; but I believe now they find it by scent. Last summer there were about thirty acres of alsike $2\frac{1}{2}$ miles northwest of my apiary. There was very little clover nearer, and the first ten days that this clover was in bloom the wind was blowing from the east. The bees were storing some from sources around home, but not a bee was going to the thirty acres. I was becoming discouraged, for I had supposed that bees would go to that alsike clover. One morning, however, as I was coming from the barn I heard an uproar and thought the bees were swarming. I ran out, and it seemed as though all the bees were leaving the hives. They were going to that alsike clover, the wind having changed so that it blew from that thirty-acre field. The supers filled up rapidly. All the bees had to fly over timber almost all the way to get to this clover, and hence I am convinced that they find nectar by scent rather than by sight.

Oakwood, Ind.

[This confirms to a great extent some observations which we made while at the Alexander apiary, located, as it is, upon a side hill, commanding a view of a valley where the eye can take in a panorama miles distant. We have been under the impression that bees depend largely on a telescopic vision to determine the exact location of any flora that might have honey; and while this may be true our correspondent has introduced pretty strong proof showing that they are also guided (sometimes at least) by scent. This is very interesting, and we shall be pleased to know whether others have observed the same thing.—ED.]

THE ALEXANDER PLAN OF CURING EUROPEAN FOUL BROOD.

Even if it is a Success, is it Ahead of the McEvoy Method from the Standpoint of Economy? the Alexander Plan Means that a Colony Must Dwindle Forty five Days.

BY E. M. GIBSON.

I fail to see any thing but loss in the Alexander plan of treating foul brood of either the European or American type. I am well aware that it would be futile to gainsay any thing which that grand old man of Marengo might endorse (page 760, Dec. 15), but I do not think the Alexander plan has the stamp of his unqualified endorsement as yet, and so we may give our reasons for doubting, and let the readers be the judges.

With the above-mentioned method the queen is taken away from the diseased colony until the brood is all hatched, which takes 21 days (I have my doubts as to whether this is long enough in all cases of European; certainly it is not for the American kind). Well, 21 days are gone without a laying queen in the hive at best. One is now in-

troduced that is supposed to be laying; but if a virgin she does not lay until the 21 days have passed. There is no laying queen, then, until the expiration of 24 days; for, even if a laying queen is introduced, it will be three days before she lays. Now it will be 21 days more before any brood is hatched, making a total of 45, and by this time the colony is much reduced in numbers of bees, and little or nothing can be expected of it in the way of surplus for the season.

What is to be done with the queens taken away from the diseased colonies? No one but a queen-breeder would be likely to have nuclei enough to accommodate them; and to prepare nuclei not only takes time, but means a further loss of bees and brood. Then there are two queens to hunt for—one in the diseased colony and one in the hive from which the brood is taken, for fear of getting the queen also.

Let us analyze the McEvoy plan, on the other hand, modified by using full sheets of foundation to start with—a plan which has been successful in my case, and which has led me to believe that the use of starters is superfluous if one is careful in other ways. One might use starters and be careless in some other way which would prove more disastrous. With the modified McEvoy treatment we do not have to find the queen. It is not necessary to start nuclei to hold surplus queens, and no colonies need be robbed of brood and bees. With one helper I can transfer a colony on to foundation every ten minutes, and keep up this rate for eight or ten hours a day. One would have to be extremely successful to find 48 to 60 queens in one day (I am making these comparisons of time, etc., as I write). In three days after a colony has been brushed on to the foundation, combs will have been built, and eggs laid in them; and from that time on, the queen will have all the room that she can possibly use, so that in 24 days from the time the colony is treated there is hatching brood in as good a set of combs as were taken away, all being filled with brood. In the Alexander plan the queen in the same time will have just commenced to lay, and 21 days must yet elapse before any brood hatches to strengthen the colony.

The only difference between the McEvoy treatment and the plan of shaking bees on to foundation to make them carry honey into the super is the brood that is given back to the bees after it is hatched. I know by experience that a colony brushed on to foundation, as soon as the bees begin to build freely in the spring will be only one extracting behind those which are not so treated, providing the disease has not depleted them too much, and they have a vigorous queen.

If there is sufficient honey in the diseased combs that were removed to be worth while, it can be extracted, boiled, and fed back after being diluted, and, if one cares to go to the trouble of utilizing the brood to start new colonies, this can be done by piling up the combs six or seven bodies high and letting the brood hatch, then putting all the

bees into a single hive, giving them a set of frames filled with foundation and a laying queen. I followed this plan with a part of my diseased combs, but abandoned it, as the process was too slow. It is my opinion that the few colonies which we may get in this way hardly pay, for the work is nearly doubled, and the diseased combs are left around too long. I have always felt that the sooner they are gotten rid of the better. The wax from a full set of combs will go a long way toward making foundation to refill the frames. Now add the set of combs made by the colony treated and we are ahead of the Alexander plan (not counting the diseased honey), by the amount of wax from the combs and by two-thirds of a crop of honey, at least; for a colony that has been 45 days without hatching brood in the height of the honey-flow can not be expected to produce any surplus; and if the bees gather even enough for their own consumption they will do well.

As to what we get for our time of melting up the diseased combs, making foundation, and refilling the frames, I can say that the treatment of either kind of foul brood can be done successfully, only during the honey-flow, and it is hardly necessary to ask how much 21 days in the height of the honey flow is worth. We think any one would be willing to do the work above mentioned for even one-half the honey that is produced in that time.

CONDITIONS DIFFERENT AT THE ALEXANDER YARD.

It must be remembered that conditions were very different with Mr. Alexander than with most of us. As I understand it, all of his surplus was derived from buckwheat, the bees building up on the earlier flowers, so that he had the whole summer in which to manipulate the bees in settled weather. Under these circumstances a queen could be removed from the hive for 21 days, and there would still be plenty of time for the colony to build up for the main honey-flow. Many of the things which Mr. Alexander advocated can not be successfully followed, for this same reason. I have in mind dividing, putting weak colonies above stronger ones, etc. I have twice tried his method of dividing by putting brood on above and setting the super off after ten days, and it is a complete failure here, for the weather is too changeable. The weather may be all right when the work is done; but before the ten days is up, a cold spell may come, the queen cells will be torn down, and started over again in a few days with brood that is too old. Any one who practices this plan long, where these same conditions exist, will soon have a lot of worthless queens. Then in the case of putting weak colonies above strong ones until they are stronger, if it happens to turn cold the bees will all leave the small colony and go down with the larger one below where it is warmer, leaving the queen above to freeze. It is better to double two or three of the smaller colonies and give them less space to keep warm. I can see how all of these plans

may be successful after the weather becomes settled and the time for sudden changes is past. In this section bees have a long time to build up—from February to June; but this is during the rainy season when the weather is unsettled and conditions are very similar to the spring months in the East.

Jamul, Cal.

[Mr. E. M. Gibson, it will be remembered, is the correspondent in California who has written such excellent articles during the last year or so. His complete analysis of the two methods of cure, the McEvoy and the Alexander, should be carefully read by all those who are interested in this great question of ridding the country of brood diseases. It is most certainly true that the question of locality must be given careful consideration. In this connection we recall that more than one of our subscribers were not able to work some of the methods advocated by Mr. Alexander, and this was due to difference in conditions.]

Referring to the Alexander cure, it is possible that this could be applied to good advantage after the white clover flow, when there would be a period of comparatively little brood-rearing. In most localities in the Northern States after the middle of July, when clover and basswood are out of bloom, there will be practically nothing doing for the bees for a month. Now, it would be possible that the Alexander method of cure might be applied at such times to the entire yard without great loss, and feeding afterward. On the other hand, when a honey-flow is on, or, we will say, during the spring when brood-rearing should be carried on to its limit, it would seem that the Alexander plan would be expensive and wasteful, and that at such times the McEvoy method should be employed instead.

The last time we visited Mr. Alexander we talked over the McEvoy and the Alexander plan of cure. If we remember correctly, he made the statement that the McEvoy plan failed to rid his apiary of the disease; that it was only after he employed his dequeening method that relief came. He then went on to mention yard after yard of some of the most successful bee-keepers in New York who had been using the McEvoy treatment, and how, in spite of all their efforts, the plague was continually coming back. In later years, however, the McEvoy plan as now administered seems to be giving good results, for, as we understand it, both European and American foul brood are well under control. As the McEvoy plan has been used almost exclusively, this condition of affairs is brought about by that particular plan of treatment.

We are still desirous of securing further reports on this general subject. In the meantime it would seem that we must take carefully into consideration the question of locality and general conditions. There are probably times when a combination of the two methods can be employed to very good advantage.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

OUTDOOR-WINTERED COLONIES LOSING A COUPLE OF DOZEN OF BEES DAILY; IS IT AN ABNORMAL CONDITION?

I have my bees outdoors in a good tight outside case; 8 single-story hives about four inches apart packed with straw between hives; also behind and on top. Each hive has an entrance 3 inches by $\frac{3}{4}$, with a storm-door hinged up in front to keep out sunlight, storms, and wind. I notice every day 20 or 25 bees from certain hives, and four or five bees from others, come out and die on the alighting-board, the weather nearly down to zero. Can you say if this condition is right, or are they too warm? Should the entrance be enlarged to six or eight inches? It seems to me that at this rate of coming out there will be few if any left by spring.

C. A. YORK.

Ruscomb, Ont., Jan. 13.

[No matter how well bees are packed outdoors, there will be a certain mortality taking place daily. Some bees, because of bad food, venture from the cluster; others, from other causes, become chilled then starve and die. Others still, because of old age, also drop off. Four or five dead bees daily is not a great loss, if you stop to figure it up, and is not much larger than we have had at Medina, and what we have observed at other yards where bees are wintered outdoors. They may not appear at the entrance every day; but on certain days when it warms up there will be a sort of housecleaning in which there will be quite a number of bees pushed out, and one would think that a large number were dying. The probabilities are you have an average of at least ten thousand bees in each of your hives. Suppose there is a maximum daily mortality of 25 bees. There are about sixty days, possibly, of cold weather. This would make only 1500 bees, or a total of fifteen per cent of the survivors. The stronger the colony the larger the number of bees that will die daily, but the smaller the percentage of loss.]

The number of bees found dead at the entrance will be much greater this winter than usual on account of honey-dew. If you have no honey-dew your daily percentage of loss should be smaller.

But the death loss outdoors is usually no greater (if as large) than the loss inside of a good cellar. We have stepped in many a cellar and found anywhere from one to two inches of dead bees on the floor, and yet out of that same cellar would come a lot of strong healthy colonies for spring. It has been contended that many of these bees are superannuated, and would die any way. It is our opinion, based on our own experience, that a two-inch deep loss of bees all over the cellar bottom is too great. We have wintered in our shop cellar, and the total number on the cellar bottom—well, they could almost be counted.

But perhaps some who were wintering outdoors will report that they see no dead bees in front of the entrances of their hives. The first warm day the bees can fly in the spring there will be found quite a large bunch of them in front of the entrance of almost every colony, if there is very much honey-dew in the hive. These would be the bees that died all during the winter.

Right here ought to be entered a caution. Sometimes the dead bees will clog up the entrance, and then there is sure to be trouble; because a closed entrance usually means death to the whole colony.

Replying to your question, your entrances are large enough providing they are kept clear of dead bees. If you do not make a practice of raking them out clean about once a month, the entrance had better be $8\frac{3}{4}$ in the case of a strong colony.—ED.]

CARBOLIC ACID IN SPRAYING-SOLUTIONS TO PREVENT BEES FROM BEING POISONED.

Mr. Root:—I was pleased to receive your letter of the 15th, inclosing one from Messrs. Metcalfe & Parks, of Mesilla Park, N. M., who, I remember, repried to you last year that their bees had been poisoned by arsenical sprays on fruit-blossoms. In reply to your inquiry as to whether carbolic acid can be used in dilute solution in the spray liquid to repel the bees and at the same time not injure the setting of the fruit, I will say that I think this is possible. I must immediately confess that I have had no practical experience in this matter, nor do I know any one else who has had such. My recommendation would be that the trees be spray-

ed just after the blossoms drop. They are not then secreting nectar, and the bees would not be working on them. The results of spraying would be fully as good as or better than if the liquid be applied while the trees are in bloom. From a horticultural standpoint I surely do not think it best to spray trees with anything while they are in bloom. Thus the danger of killing the bees will be entirely overcome.

As the inquirer does not state what kind of fruits he sprayed I can not give the formula with such certainty as I would if I knew for sure whether they are the pome fruits or the stone fruits. In general, however, 2 lbs. of arsenate of lead, 1 lb of bluestone, and 3 lbs. of lime in 50 gallons of water will be found safe and efficient. If there really be danger of the bees sipping this, it can be avoided by the addition of a very small quantity of carbolic acid. The crude article will do as well as the refined, and is, of course, much less expensive. By shaving 1 lb. of hard soap fine, in a gallon of hot water, one can add one gallon of carbolic acid to this soap solution, and emulsify it by vigorous beating or churning through a spray-pump. It will become a creamy mass, and can be kept as a stock solution. Only enough of this will be needed in each barrel or tank of the arsenical spray to repel the bees; and as bees are very readily repelled by the odor of carbolic acid, this means that the quantity will be so slight as not to prove injurious to young fruits. It is my opinion that the addition of one-tenth of one per cent of the carbolic acid would pollute the spray liquid so as to repel the bees, and that considerably more than one per cent will be needed to injure the fruits.

Harrisburg, Pa., Jan. 18.

H. A. SURFACE,
Economic Zoologist.

[Reference has been made before in these columns to the use of carbolic acid in spraying-solutions to keep the bees away from the fruit-trees; but no one so far seems to have any definite knowledge of how the acid has been used. If any one can furnish the information we shall be glad to hear from him. In the meantime we have no doubt that the suggestions made by Professor Surface (who is probably one of the best authorities in the United States on spraying) will be safe to follow.—ED.]

KEEPING WEEDS DOWN AROUND HIVES.

How can I prevent grass and weeds from growing about my hives? For some time I have had my ashes put in the apiary in order to keep down grass and weeds, and to give the place a neat appearance; but this season dandelions, docks, and fall grass are most luxuriant; and even salt does not kill them as I once thought it would. Kindly tell me something not poisonous to bees that will surely keep down all growth around the hives.

Moorestown, N. J., Aug. 7.

S. E. WILLIAMS.

[If you have a permanent location for your apiary, and wish to go to the expense, a good way is to make a concrete foundation for the hives. This can be made a few inches larger than the hive in order to prevent grass and weeds from growing too close. The top of this foundation may be made level with the ground; and since there would be no object in using a very thin mixture of concrete we believe that one part of cement to nine or ten parts of sand and gravel would be sufficient. If the sand and gravel can be obtained cheaply, the expense will thus not be very great aside from the labor of making them.]

Salt will kill weeds and grasses if enough is used. It is so cheap that small handfuls of it scattered here and there, especially around the entrances of the hives, will make short work of vegetation not wanted. If your yard is located out in the country where sheep are kept, you can easily crop down grass and weeds by letting the sheep loose in the bee-yard at night. In fact, it will do no harm to leave them there all day. Occasionally a sheep will get close to an entrance; but unless a bee stings it around the eyes or nose it can do but very little harm. It does not take a sheep long to learn to push its head under a clump of bushes, when the rest of its anatomy will be taken care of by its wool.—ED.]

MOVING BEES IN COLD WEATHER; IS SNOW A PROTECTION TO OUTDOOR-WINTERED BEES?

What, in your judgment, would be best for me, as I do not find anything printed regarding my situation? I have bought 60 colonies of bees 20 miles distant; expected them to have sufficient stores to remain where they are outside; but by chance I discovered they were very light. We have a solid sheet of snow from one to three feet deep all over. Would you advise me to move them home those 20 miles on sleighs when we

get a temperature of from 30 to 40°, and place them in a bee-cellar where I already have 70 colonies? Would you expect it to cause a great loss owing to bees filling themselves or would it not be just as bad in early spring when roads are rough, owing to the greater activity of bees at that time?

I have another yard of 60 colonies snowed half under before I could get them in the cellar. They are in ordinary dovetailed hives, Colorado covers, so I left them, thinking the snow was as good as any protection to bees. Would you put them in the cellar the last two months, as I now have a cellar empty ready for bees?

NEILS A. NELSON.

Dike, Iowa, Jan. 18.

It is perfectly feasible to move bees during cold weather when sleighing is good, although we would select a time when it is just below freezing. We would not advise waiting until spring when the roads are broken up. If they be moved now and put into a cellar the disturbance would cause no trouble—at least, reports where precisely this same thing has been done in the past have not shown any bad results.

Yes, snow, if banked up around the hives, is a decided protection. The more we can have the better, providing it does not melt around the entrance and freeze, sealing the entrance hermetically. That is the only danger arising from too much snow. An ordinary light snow banked up around the entrance will do no harm; but should there come a thaw, then a severe freeze-up afterward, the apiarist would do well to look to his entrances.—ED.]

CAN THE DOOLITTLE PLAN OF NON-SWARMING BE WORKED WITH THE CHAFF HIVE? FEEDING BEES WITH A SYRUP MADE FROM SCRAPS OF CANDY.

Will you please inform me how to work the Doolittle plan of non-swarming? I have all double-walled hives with tight bottoms. Could I put a single-walled hive on top? Can I shake No. 2 hive into No. 1 instead of No. 1 into No. 2?

I also should like your opinion of feeding scraps of candy to bees in the spring in syrup form, such as horehound, anise, tartaric acid, menthol, peppermint, butter-scotch, leaving out medicated cough drops, burnt sugar, etc.

PHILIP F. DEBBOLD.

Clinton, N. Y., Jan. 19.

[There is no reason why you should not work the Doolittle system of non-swarming with a double-walled chaff hive, providing such hive is built on the modern plan, so that a single-walled hive or super can be set on top. If you consult the bee-supply catalogs you will find in most cases that single-walled supers and hive-bodies can be used on top of double-walled chaff hives of the same frame capacity.

We would not advise you to give bees syrup made from scrap candy during cold weather. You can use this to good advantage toward spring when the bees will have a little opportunity for a cleansing flight. As a general thing we would not recommend any thing for winter food except the best of honey or granulated-sugar syrup.

Burnt sugar would be almost sure death to a colony, although it could be used safely enough in warm weather when the bees can fly.—ED.]

BEES GETTING CHILLED AT THE ENTRANCES OF THE HIVES.

I started bee-keeping in the spring of 1908 with one colony. I increased this colony to four fairly strong colonies, which are provided with good stores, and are in single-walled hives, packed warmly in winter cases. The bees wintered well last winter; but this winter, although the conditions are the same, I find a handful of dead bees every few days around the entrances, both outside and inside. They seem to run to the entrance and get chilled so that they are unable to get back. Is the hive too warm or too cold? We have had zero weather lately, and I had the entrances $\frac{3}{4}$ x 2 inches, but have lengthened them to 6 inches and in some cases to 8; but the bees come out and die just the same. If this keeps on I shall lose all before spring, as a handful every other day is too much loss for any colony.

P. J. HOEVEL.

Bradentown, Fla.

[Mortality of bees is greater during severely cold winters than mild ones. This is one reason why you find more dead bees in front of the entrances this winter than last; but probably the greatest reason for making the bees come out is the character of the food. If there is much honey-dew in your hives many bees will become uneasy on account of their intestines be-

coming clogged. Those bees you see coming out are probably seeking a chance to fly. They chill and die when they come outside. Bad food is one of the causes that induce spring dwindling.—ED.]

NEW MEXICO WELL ADAPTED TO BEE-KEEPING.

As I have not seen any thing from our country, I venture to report. I live in the northwest corner of New Mexico, in what is known as "The Sunny San Juan Co." This is a great fruit country—one of the best in the West. It is a new country, with a delightful climate, and one of the very best for bees.

I have been in the bee business for a number of years, and I have made it my leading business. I can say that, so far, I have never made a failure. Failures do come, but I have been so fortunate as to escape.

I started with bees in this place one year ago by purchasing 140 colonies. Of these I lost 35 in the spring; and as I had to feed, things looked discouraging; but the willows began to bloom, the bees took courage, and we got a good honey-flow. Afterward the swarms came till I now have 170 colonies.

I had a large swarm July 4 that filled the hive and made me seven 24-section cases of honey that sold at home at \$2 75 a case.

I have kept a strict book account, and I find that an investment of \$528 for bees and all supplies has brought a return of \$895 in twelve months, and I now have more bees and supplies on hand than I started with.

I did equally well when in Colorado; but I think this the best country for bees that I have seen yet. I have been in a number of States.

REV. T. D. SAFFELL.

Farmington, New Mex., Dec. 20.

HOW TO MAKE SYRUP SO THAT IT WILL NOT CANDY.

Several years ago my father kept bees at Quincy, Michigan, and one winter he was obliged to feed his bees quite a little syrup. He experienced some difficulty with the first he made in keeping it from candying. He was a subscriber to GLEANINGS at that time; and as I remember it he wrote you to learn how to make the syrup properly. I do not keep bees, but have occasion to make syrup from granulated sugar frequently, but have not been successful in making it so it will not candy. The syrup we make we prefer to have quite heavy.

E. D. RICKETSON.

Mason City, Iowa, Jan. 19.

[Our practice is to put nothing in the syrup to prevent candying; but there are some who find it necessary, especially if the syrup is thick, say two $\frac{3}{4}$ parts of sugar to one of water. To prevent candying, Dr. Miller recommends a teaspoonful of tartaric acid to every 20 pounds of sugar. Doolittle uses honey in place of acid in these proportions: 15 lbs. of water, 30 lbs. of sugar, and after the mixture has been thoroughly heated he adds 5 lbs. of extracted honey, making in all 50 lbs. of feed.—ED.]

IS THERE ANY LAW REGULATING THE DISTANCE OF BEES FROM THE HIGHWAY?

Will you please inform me if there is any law as to how far bees may be set from the hives of our neighbors—also from the street?

WM. H. MORSE.

North Girard, Pa., Jan. 19.

[There is no law in any of the States that we know of that regulates the distance that bees shall be kept from the general highway. As a matter of precaution, however, we would advise putting all bees in the back end of a town lot, or, if they are to be located in the country, at least 100 feet from the general highway, and the same distance from the line fence, especially if there is a cultivated field in which horses may be driven in plowing or cultivating.—ED.]

A SUCCESSFUL WAY OF KILLING RATS.

—There are many ways to catch rats; but most traps are useless so far as getting the "old timers" is concerned. An experiment of mine has proved successful with both the old and the young rats. I take two tin pans; fill one with meal and dry plaster of Paris, half and half, well mixed together, and the other one with cold water. I put them where the rats can get to them easily, and then watch if possible. The rats eat the meal and then drink the cold water. The plaster causes them to drink a good deal of water, which sets the plaster and causes death. I have found rats afterward almost as hard as a stone.

W. HACKING.

Idaho Falls, Idaho.

[This looks as if it might work well. If any reader tries it we should like to have him report.—ED.]

OUR HOMES

By A. I. Root

Thou art the Christ, the Son of the living God.—MATT. 16: 16.

Lord, save us; we perish.—MATT. 8: 25.

Most automobiles—in fact, I think I may say all automobiles—have a special and exceedingly important mechanism called the “brake,” and this brake, or system of brakes, is for the purpose of not only checking speed but of bringing the machine speedily to a standstill when occasion may require. The machine I have run for so many years (and so many *thousand* miles) was made with *three* brakes. First, if you pull the starting-lever backward instead of forward it acts as a brake. Besides this brake there is a pedal to be operated by the left foot. This is more powerful, and will, if pushed hard, bring the *engine* almost “up standing” at once. You might at first thought say, “Why, these two brakes are surely enough;” but, listen and consider. Suppose the chain (or other machinery) that connects the engine to the drive-wheels should suddenly break. Chains wear out, and are often run when they are liable to break and drop clear off the machine. Of what use is your brake on the *engine* when the chain is gone? Suppose you are going up a long steep hill and your chain gives way. Your machine will at once go down backward at a speed requiring the utmost skill of the most expert chauffeur to keep it from a disastrous wreck.

Well, to guard against such contingencies all good machines have what is called an “emergency brake.” This brake has no connection with the engine, but clutches with a grip of steel the powerful driving-wheels of the craft; and the lever that works the device, although out of sight, and as a rule unused, is so close to the driver’s right hand that he can grasp it firmly, if need be, *in the fraction of a second*. I hardly need tell you of the importance of thoroughly testing this *emergency brake* often. If a dog suddenly rushes in front of you, you should be able not only to save the *dog*, but possibly save a smashup of the whole outfit, endangering the limbs and lives of the occupants. Running over a worthless dog recently overturned and made an expensive wreck of a big and valuable machine.

Let us now change the subject a little. Last evening (Wednesday) the leader of our prayer-meeting took the subject of prayer. He asked different members present several questions, and finally gave me the question, “To *whom* should we go in prayer?” In reply I gave the above about the automobile, and finally added we should go to the Lord Jesus Christ, and that it is every Christian’s privilege to find in *him* an “emergency brake” fully adequate to arrest our frail human bark and pilot it safely through *all* life’s emergencies. That little prayer, “Lord, help,” has been my “emergency brake” ever since I started to follow the lowly Nazarene. I have before told you that I have used

it so much that it rings out in my heart like an alarm bell (*all of itself* I might almost say), whenever danger or a crisis appears. When the danger is very great, the prayer is, “Lord Jesus, help.”

I want to give you two instances of how this “emergency brake” works.

One morning years ago, I came over to the factory just before the whistle blew and found the janitor (an elderly man who had been long in my employ) talking vehemently to a group of the hands. He was so much stirred up he did not notice my presence, and kept on. I soon gathered from the smiles from those present that it was my poor self he was rating. Finally he turned so as to discover I was present and had heard his tirade. He stopped a little; but as he was still angry he turned on me and gave me, right before a lot of hands, a regular “blowing-up.” I think his charge was that I was too easy with certain ones. That I had particular favorites who broke rules as they pleased, etc. I had opened my mouth to reply and tell him, as pleasantly as I could to hunt up a better lot of folks to work with; but, sharp and clear, came the “Lord, help!” The “emergency brake” gave orders to say nothing to him at all while he was angry, even though he *had* been stirring up disrespect to his employer. I looked around smilingly on the crowd that had gathered, then walked away with long rapid strides amid the roars of merriment from the group of bystanders. I felt happy over my victory (as the Christian always does), and forgot all about the incident until along toward noon when the janitor followed me into one of the basements, and, with tears in his eyes, said something as follows:

“Mr. Root, I do not know how I can ever thank you enough for not turning me off on the spot this morning as I deserved. I am out of health, and touchy, I suppose. I don’t think you know how some of them take pains to vex me and hinder me from looking after the interests of the business. You have always been my best friend; and if you will forgive me this time I will try to show you my penitence is not all empty words. I am trying to be a Christian; but I make such poor work of it I sometimes think I had better give it all up.”

He was in our employ several years afterward; and, when near to death, he sent for his old employer; and it was my privilege to cheer him up as best I could ere he took the trip across the dark valley.

Now, friends, suppose I had on that particular morning told him with harsh words to “get off our premises, and never show your face here again!” What would have been the result? He and I would have been enemies the rest of our lives. His Christianity would have received a shock, and *mine too*, for such things *always* “cut both ways.” Don’t you think *you* had better adopt my “emergency brakes”? It will cost you nothing, for the Savior’s love is as free as the air we breathe and the water we drink. I have outlined in the above two ways of settling a

difficulty. What would be the effect on humanity should one spend his whole life in the way I was prompted to do, rather than the other way?

Before giving the second illustration let me say the dear children, as well as Mrs. Root, have often objected to that portion of these Home papers where I tell of my own temptations and impulses toward selfishness and wrong; and God knows it is no pleasant task to admit I am tempted to be selfish.

I give you these conflicts just as I give you my fights against the wild animals that destroy my chickens, that you may in like manner come out victorious against the foes of honest industry.

My old father was, while on the farm, greatly interested in raising and selling colts. Well, when he was making a sale he was so careful to tell the purchaser the *faults* as well as the good qualities of the horse in question, that we children used to tell him he overdid the matter, and made out the horse worse than he really was. I hope it was true (bless his memory) that he was more concerned about being *strictly honest* than he was about getting a good round price for his horse flesh.

Now I hope you will excuse me for going into the details pretty fully of a simple little transaction, for there are important *principles* involved in it.

I was away from home, in a town where I was not very well acquainted. I had an important letter to mail and was out of stamps,* and, still worse, but little money to buy them. It was just before the holidays, and there was so much mail and so many packages that extra help was called into the office. The additional help was only a schoolgirl, evidently; but I presume the postmaster decided she could preside at the stamp window, even if she had but little experience with money and making change. I laid down a coin, and asked for 25 two-cent stamps. After a little time in counting the stamps, she handed them over to me with two coins—a half-dollar and a quarter. Let me digress a little right here. If I should tell you of something I had *dreamed*, no one could tell whether I told the exact truth or not. Only *God* could tell. In the same way, when I tell you of the conflicts that went on in my own mind, only God knows whether or not I am truthful. As near as I can remember, it was in a somewhat absent-minded way I took the coins and the stamps and went over to another part of the office to mail the letter. As I was dropping the letter in the box I was aware my spiritual nature was waking up. The “alarm,” or, if you choose, conscience, protested, and I looked at the coins in my hand. I went back to the girl and said:

“Did you not make a mistake? Twenty-five two-cent stamps would be *fifty cents*.”

“Oh! I guess I did,” she replied, and I gave her back the quarter.

Nothing particularly wrong in the above, is there? I would gladly stop here; but I can

not, and be truthful. I put the half-dollar in my pocket and started to go away; but the “emergency brake” came down harder than ever. My impression, when I laid down the coin for the stamps, was that it was only .0 cts., but when 50 and 25 also *came back* with the stamps, I tried to persuade myself it must have been a *dollar* after all, and decided to let it go at that; but when I was just about to step out at the doorway I recalled that I had searched my pockets just before going to the office, and declared there wasn’t a “whole dollar” in my possession. The conflict in my heart probably lasted only a second or two; but one may at times go over a good deal of ground in a second.

Satan, at least once, tried to tempt our Savior. On this occasion I can imagine he tried to argue with *me* in something the same way. He made three different points or reasons why I could honestly keep the coin I was fingering. First, he said, “In these busy times it isn’t necessary to count the change you receive. It looks small. Push it in your pocket and go ahead with business. If anybody gives you too much, it is his affair, not yours.”

Secondly, he put in, “You are not taking the *girl’s* money—of course you wouldn’t do that, but what is 50 cts. (that you *need* badly) in Uncle Sam’s vast domain with his *tons* of stamps and dollars?” The above is a pretty tough confession for A. I. Root, is it not? Perhaps I *have* got it a little strong, just as my old father used to do in selling his colts; but the thought did cross my mind at least faintly. The conductor on a railway was once dismissed because he was “color-blind.” He had gradually failed to see any difference in the “color” of the money belonging to the company and that belonging to himself. While I fingered the coin and procrastinated, the color of Uncle Samuel’s stamps and money seemed *different* from that belonging to individuals.

My friends, this same “color blindness” that I have been describing will wreck our whole nation and send the whole of humanity to the bottomless pit if we can not get cured of it. Lastly, he suggested that, perhaps, I really *did* have a dollar in my pocket, and the girl was right about it. I suppose this is possible, but not at all probable under the circumstances. What ought an honest man and a Christian do when it seems impossible to decide *absolutely* whom the dollar really belongs to—your neighbor (or, perhaps, the great public), or yourself? In a case like this, where you *alone* must decide, what shall you do? Listen to the promptings of the “emergency brake” and say, “God helping me, I will suffer wrong, rather than do wrong, to the end of my days.”

I went back once more to the stamp-window.

“I fear, my friend, you have made still another mistake. Do you remember what coin I gave you for the stamps?”

“Why, I supposed it was a dollar—was it not?”

“I am sure it could not have been a dol-

* I had lost a check I was expecting to get cashed at the bank.

lar, for I did not have a dollar in my pocket." After the coin was in the hands of the rightful owner the emergency brake dropped back out of sight, and I went about my business with a light and happy heart. We are told "a good name is rather to be chosen than great riches," and I want to add that a clear conscience is worth more than all the stamps and money the whole wide world contains. Shortly after, my missing check came in a letter from a Philadelphia firm, saying I had doubtless sent it by mistake.

POULTRY DEPARTMENT

By A. I. ROOT.

OUT-GENERALING THE "VARMINTS," ETC.

I told you in my last that the possum pulled out of our best steel trap twice. Well, after he had in like manner pulled out *five times* I went to the drugstore and got a dime's worth of strychnine, and two big fat possums were found laid out next morning. Later we found another, and three skunks also. No wonder we had trouble with our chickens. A neighbor, Mr. Raub, and, by the way, an old bee-keeper from York State, said our traps were not *set* right. He showed Wesley, so that we are now getting rats and skunks every few days. I have told you the rats of the United States cost our people a *hundred million dollars* every year. How much do prowling wild animals, such as possums, skunks, weasels, etc., cost poultrymen? We have many visitors; and almost every one, no matter what State he comes from, can relate a similar experience in trying to raise chickens. The most of them give it up, and pronounce chickens "too risky." Shall I give it up? Not much! We have an inch-mesh netting put down into the ground, all around our two acres. When we find a place where they have dug under, or *tried* to, we set traps there. My neighbor Rood said my war on these pests was a great blessing to this whole neighborhood.

I do not know that I ever made any thing that gives me more pleasure and satisfaction than the brooder house I have mentioned. I expect to give you a picture of it soon. The netting stapled to the sills goes down into the ground a foot; and just a few nights ago some animal dug down against the netting in seven places all around the house. How did he know there were two brooders full of ten day-old chicks inside? The brooder-house secures three very important things: absolute safety from prowlers; a nice warm place out of the wind when it is cold, and a safe dry place to ramble and play and scratch when it rains or when the grass is too wet to go out.

Not only is there a satisfaction in beating the enemy, but it is some thing like this:

My neighbor Rood says, with a comical smile on his face, when we have a touch of

frost, "If it kills all the stuff north of us there will be no glut in the market, and we Manatee Co. people will get better prices."

Now, don't think from this that Mr. Rood is not a Christian in his planning. He looks at it this way: There is nothing very wrong in looking forward, and planning by every means in your power, so as to have a good crop at just the time many or most people fail. We should be ashamed of giving way or giving up to *preventable* troubles like those I have mentioned.

After I had fenced out and destroyed the skunks, rats, and possums, I had only six chicks left of the 70 that came out of the incubators, and one day a hawk came into the dooryard, within a few rods of where I was standing, and got one of the six; but I yelled to such purpose that he dropped him. The chick limped about for a day or two, but now is all right. Mr. Rood came over with his gun, but didn't quite get a shot at the bird. As hawks took a chick or two last winter I have on hand enough three-inch-mesh netting to fence *overhead* a chicken yard 40x75 feet. As no more hawks have appeared, however, we are awaiting further developments. I have taken off another hatch with my two incubators (Cyphers and my own). Quite a few eggs were tested out in five days, and more later; and finally a large number in *both* machines died in the shell after being fully developed. My own incubator gave about 70 per cent of the fertile eggs, while the Cyphers this time gave only about 55. The chicks are now about ten days old, and the two lots are kept separate. Four have died from the Cyphers brood, but none from mine. I fully expected the Cyphers would be ahead, and I can not account for so poor a hatch, especially as I ran it exactly according to directions in a good incubating-cellar.

The Cyphers chicks are in the Clough lampless brooder. My own are in a lampless brooder that I received *by mail* from Boston. It is called the "Lullaby" brooder; and for use in a brooder-house I should place it ahead of all other brooders, not even excepting my own basket brooder. It seems to embrace, more than and other brooder, the principle I have so vehemently enjoined for both chicks and humans; viz., keeping the body warm while the breathing apparatus is right out in the *pure cool* air. The Lullaby is essentially a round box made of corrugated paper and cloth. This box or circle can be let out so as to enlarge it as the chicks grow and need more room. For instance, 25, when first out of the incubator, can squeeze inside of a box about the size and shape of a half-peck measure; but when in such close quarters they must have air; and to let them get it "straight and pure" there are two oval "bay windows," 2½ in. high and 4½ wide. These windows are also used as doors; but at night a row of little heads, even in cool weather, is always close up to both windows. A cushion is arranged with a rattan spring so it will keep its place just over their backs. In such a circular nest

the collective animal heat from 25 little fluffy bodies keeps them abundantly warm, even on frosty nights. As with all other lampless brooders, feeble ones, if there are any, seem to need a little heat on cool mornings when all the rest are out running about. It is made by the Park & Pollard Co., 46 Canal St., Boston, Mass. It cost \$1 50, and I think it is worth almost that much to get the idea.

ANOTHER "DISCOVERY."

I told you the only rat-proof feed-hopper I knew of was a tall tin can that the rats could not jump into nor out of, and I said such a can would also bother many of the chickens. Well, listen: Get a galvanized iron tub for 50 or 60 cts. Set it in the middle of the poultry house on the ground until all your chickens, old and young, learn to go there for feed. When they all understand it, raise the tub up a little, and finally hang it by three wires from the rafters overhead. If your fowls have access to the house by only a small door near the ground it will be a long time before the sparrows find it. In warm weather, when the doors and windows are open, all such openings should be covered with inch poultry-netting.

POULTRY SECRETS, RECIPES, NEW SYSTEMS, ETC.

I am still investing my money, and *sometimes* I get a little something valuable. Such books as the Corning Egg-book, however, by the *Farm Journal* people, are worth *five times* their cost. That is, the price is marked 25 cts., and it is well worth *more* than a dollar; while the "Miller system," price \$1 25, is hardly worth 25 cts.—see page 718, Nov. 15. I sent the money for the book early in November, but it did not get around until about Jan. 15th. It is a cheap paper book with but a small amount of matter (in very large type) on each page. The plan for warming a brooder at an expense of only " $\frac{1}{4}$ of a cent a month" is by a manure hot-bed, and I will only ask market gardeners what they think of keeping up the heat in a hotbed at the above figure. There isn't a picture, not even of a poultry-house, in this whole \$1.25 book; but there are three or four very good diagrams of feed-hopper, automatic nest, etc., in the fore part of the book. I should say the things he tries to describe are altogether too complicated. I couldn't make such a hen's nest from his description, to save my life. The great secret of feeding a hen a whole year for only "*five cents*" is, so far as I can understand, by selling the manure for *almost* as much as the grain costs. Where is there such a market for it? The way to make \$60 a year from each hen is to set every egg and "work for nothing and board yourself." If you carry out the "System" *in full*, he says you can make \$120 from each hen; and *The Poultry Culture Monthly*, that has been giving the "Miller system" such tremendous write-ups, month after month, in one place says each hen will give her owner \$120 000 a year if the "system" is fully carried out. I suppose the figures are a misprint; but I have seen no correction of it as such. Perhaps it is just

as well to let it go that way, after all, so that others may get discouraged in their ambition to advertise (a "system") something *still bigger* than any predecessor.

Dear friends, have we not almost "systems" enough already? How about skunks, possums, hawks, etc.?

While speaking of poultry-books I am glad to say some of the incubator catalogs are excellent books for the beginner. The "Artificial Rearing of Poultry," just out by the Prairie State Incubator Co., is worth more than some of the \$5.00 systems. It is written by an educated and I should say *Christian man* and tells the *truth* about what one may expect from the poultry business. The book is given away, while the "Miller System" costs \$1.25 with its exaggerated and practically impossible statements. It may be urged that the incubator folks have something to sell; but so have the Miller System people; and I doubt if one man in a hundred could make the Miller nest and hotbed brooder, no matter how he tried, from directions in the book.

A SECRET FOR MAKING CHICK FEED.

James M. Brown, Pell City, Ala., advertises a secret for 50 cts. for making a very superior feed for baby chicks as well as older ones. Well, this time the recipe is good, and I heartily indorse it; but, like almost all the others, it is by no means *new*. It is simply to roast or parch in a slow oven some corn, wheat, oats, Kaffir corn, sorghum seed, etc., and then grind it coarsely, according to the age of the chicks. I saw the recipe in "Miner's Poultry Book" sixty years ago, and fed my chickens parched corn ground in a coffee-mill, and have used the same more or less ever since. By the way, if you can get some nice clean grain you will find this process will give you about the most delicious and wholesome breakfast food you ever ate, and it is also the *cheapest* food one can live on. Grind it in the little mill I have described on page 30, Jan. 1. The *Practical Farmer* has recently described parching wheat before grinding in the little mills. Serve with a bowl of milk, and see if you do not consider it an acquisition.

CAST THY BREAD UPON THE WATERS, FOR
THOU SHALT FIND IT AFTER MANY
DAYS.—FCC. 11:1.

The following came as a postscript to a kind letter from one of our readers now 67 years old. May God be praised for such testimony. Are there any more of the "veterans" who received a smoker and "*kept the pledge*?"

It is now about 30 years since I received the gift of a smoker from you, conditioned on my discontinuing the use of tobacco. I have never used tobacco since. I have often wondered how I could have been so selfish all those years in gratifying my own pleasure in a manner so offensive to others from a simple want of thought, for all through my long life I have always been considerate of the feelings of others; but only in the use of tobacco did I fail to realize the enormity of my selfishness, and I have always since connected the name of A. I. Root with that kindly action in days long passed by.

Ferndale, Wash.

A. W. THORNTON.